Antidegradation 101:
The Basics of Antidegradation Policy and Implementation

What is Antidegradation?

The Clean Water Act (CWA) Section 303 (Title 33 of United States Code [U.S.C.] 1313) requires states to adopt water quality standards for waters of the United States within their applicable jurisdiction. Such water quality standards must include, at a minimum, (1) designated uses for all waterbodies within their jurisdiction, (2) water quality criteria necessary to protect the most sensitive of the uses, and (3) antidegradation provisions. Antidegradation policies and implementing procedures must be consistent with the regulations inTitle 40 of the *Code of Federal Regulations (*CFR) 131.12.

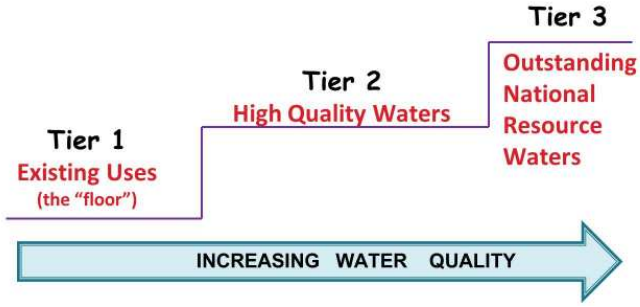

Figure 1. Three tiers or levels of water quality protection identified in federal antidegradation regulations.

Antidegradation is an important tool that states use in meeting the CWA requirement that water quality standards protect the public health and welfare, enhance the quality of water, and meet the objective of the Act to "restore and maintain the chemical, physical and biological integrity" of the nation's waters. EPA's regulation requires that states adopt antidegradation policies and identify implementation methods to provide three levels (tiers) of water quality protection to maintain and protect

1) existing water uses and the level of water quality (WQ) to protect those uses (Tier 1),
2) high quality waters (Tier 2), and
3) outstanding national resource waters (ONRW; Tier 3) (Figure 1).

The entire text of the federal antidegradation regulation appears below—it is remarkable for its brevity, which masks the considerable difficulties faced by public agency staff in implementing the seemingly elegant and simple principles described. Alaska's antidegradation policy in 18 AAC 70.015 follows this regulation very closely.

> (a) The State shall develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy pursuant to this subpart. The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following:
>
> > (1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.
> >
> > (2) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that

quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

(3) Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

(4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Act.

The basic "floor" of antidegradation regulations (Tier 1) does not allow loss of an existing use nor does it allow water quality to drop below levels needed to maintain an existing use (Figure 2). Existing uses are "those uses actually attained in the waterbody on or after November 28, 1975." This is an important distinction—waters must be protected at a level reflecting the highest use achieved since November 1975 regardless of whether water quality has declined since then or whether that use is recoverable. The basic protection provided by Tier 1 applies to all waters, regardless of use designation.

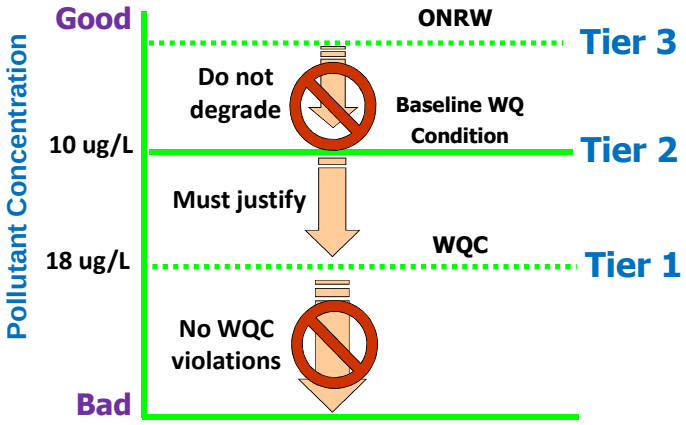

Figure 2. Example illustrating the three tiers in antidegradation policy.

The second level of protection is for high-quality waters. High-quality waters are defined in 40 CFR 131.12(a)(2) as waters where the quality of the water is better than the levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water. Thus, Tier 2 waters are those recognized as being naturally better than water quality criteria for aquatic life and recreation, and they should be maintained in that condition (e.g., concentrations of certain pollutants are very low, biological communities are known to be representative of fauna having minimal human impacts) (Figure 2). The higher water quality of Tier 2 waters can only be degraded by a wastewater discharge or other activity if the state finds, after public participation and intergovernmental review, that allowing lower water quality

- is necessary to accommodate important economic or social development in the area in which the waters are located;
- protects existing uses;
- meets all applicable statutory and regulatory requirements for all new and existing point sources;
- uses all cost-effective and reasonable BMPs for nonpoint source control;
- uses the most reasonable and effective methods of pollution prevention, control and treatment; and
- meets applicable water quality criteria and the whole effluent toxicity limit.

EPA stresses the importance of identifying and protecting Tier 2 waters as these are the ones most likely to be affected by potentially degrading activities or proposed activities.

Finally, the third and highest level of antidegradation protection is for outstanding national resource waters (ONRW). ONRW typically include waters within National and State parks or wildlife refuges, or waters of exceptional aesthetic, recreational, or ecological significance. If a state determines that the characteristics of a waterbody constitute an ONRW, and designates a waterbody as such, those characteristics and water quality must be maintained and protected (Figure 2). Only minor and temporary decreases in water quality are allowed in Tier 3 waters. The CWA does not require states to adopt ONRW necessarily, but they must have a mechanism in place whereby ONRW could be adopted.

Table 1 introduces and summarizes some key terms and issues associated with antidegradation, policy, and implementation.

Table 1. Summary of federal antidegradation concepts, key issues, and terms.

Concept	Key issues	Key Terms	Comments
Tier 1 All waters should be protected at some basic level.	In actuality, implementing an antidegradation review procedure focuses on regulated activities impacting regulated waters, i.e., waters of the state or waters of the United States.	Regulated activities Actionable activities Regulatory authority Control document Permits, certification Surface waters Waters of the state Waters of the United States.	Can include intrastate isolated wetlands and groundwater if state regulations stipulate. Regulated activities include NPDES and section 404 permits, and section 401 Water Quality Certifications; can include septic and withdrawal permits.
	The basic level of protection is defined by existing uses of the waterbody and the water quality criteria (WQC) associated with those uses.	Existing use Water quality criteria Water quality standard	Existing uses are water quality targets implicitly or explicitly attained at any time since November 28, 1975. Existing uses cannot be removed and must be protected. Designated uses are desired uses and usually cited in state water quality standards.

Concept	Key issues	Key Terms	Comments
	If water quality is already worse than the minimum WQC threshold for some pollutants, additional loadings of those pollutants should be banned if water quality will be further lowered.	Use impairment Use impaired waters Applicable WQS (water quality standards) TMDLs; 303(d) list Trading	Trading may allow new loadings if the new loads are completely offset by reductions in existing loads. Loadings of other, nonproblematic pollutants are not affected if they are nondegrading or if they are subject to antidegradation reviews that provide authorization.
Tier 2 Waters that are cleaner than the *basic* level (i.e., WQC) should be protected at that existing higher quality unless there is a significant local benefit.	*Cleaner* can be expressed parameter-by-parameter, numerically or narratively, or through some other scheme. Tier 1 protection still applies, to keep water quality at or above threshold water quality criteria numeric or narrative values.	High-quality waters WQ better than WQS Assimilative capacity Available capacity	EPA prefers the *parameter-by-parameter* approach, which infers that many (even most) waters are always protected at both Tiers 1 and 2 (i.e., most waters will exceed minimum levels needed to support existing uses for at least one or more parameters at some time). Determining available assimilative capacity for each parameter provides a basis for quantitatively assessing degradation and its relative significance involves some knowledge of existing (baseline) water quality and the nature of the proposed discharge.
	Measuring water quality to determine when (and by how much) it is *cleaner* than the basic (WQC) level can be resource intensive; regular updates (i.e., yearly) are often needed	Baseline water quality Existing water quality Ambient conditions Current conditions	Baseline (existing) water quality (BWQ) provides the yardstick against which degradation is measured; it can be difficult to characterize and update. Depending on the loading inputs under consideration, seasonal and/or event-based assessments might be needed.
	Most states allow some non-significant impacts or degradation in these higher quality waters without requiring social or economic justification.	De minimis discharge Non-significant discharge Significant degradation Allowable degradation	EPA memo indicates discharges using up to 10% cumulative assimilative capacity may be considered non-significant or de minimis. Allowable degradation might include use of some portion of the available assimilative capacity (e.g., 5%–25%) for specific pollutant(s), or characterizing BWQ at a certain percentile (e.g., 85%) of total ambient measurements and requiring new loads to meet those *antideg* concentrations at end-of-pipe. Cumulative, consecutive, multiple allowances for non-significant impacts can result in water quality criteria exceedances and use of remaining assimilative capacity incrementally, without an antidegradation review.
	Important social, economic, and local/regional benefits can be difficult to demonstrate.	Economic development Social development In the area	Guidance from federal, state, and other sources are available to conduct a wide range of analyses—from simple to complex.

Concept	Key issues	Key Terms	Comments
	Demonstrating that degradation is *necessary* requires analyses of alternatives to the proposed activity and assurances that all legal, cost-effective, and reasonable point source and NPS controls are in place.	Highest statutory and regulatory requirements for new and existing point sources. Cost-effective and reasonable BMPs for nonpoint sources Necessary	While not requiring BMPs for NPSs, there is an expectation that the most obvious, egregious, and manageable NPS loadings are minimized under antidegradation provisions. Nondegradation applies to all regulated nonpoint sources, and to stormwater from regulated MS4s, industrial, and construction activity. Specific procedures for conducting analyses of alternatives to the proposed activity can require significant resources, and fail to provide relevant information if they are not robust. Defining *cost effective* and *reasonable* can be difficult.
	Federal and state regulations require public participation and intergovernmental coordination under the state's Continuing Planning Process (CPP), a requirement of the CWA.	Public hearing Intergovernmental coordination Continuing Planning Process (CPP) under CWA	Public hearings on multiple issues (NPDES permit, antidegradation, and the like.) can be combined; states can use existing procedures; Continuing Planning Process procedures are sometimes old and outdated.
Tier 3 Some pristine or unique waters should not be degraded even if socio-economic benefits can be shown.	Designation of Tier 3 waters can be problematic if nearby landowners fear a ban on development.	Outstanding National Resource Waters (ONRW) and Outstanding State Resource Waters (OSRW) Unique waters Tier 3 list Nominating Tier 3s Approval for Tier 3s	ONRW and OSRW are considered the most pristine in the nation. These waters are usually listed in state WQS. Some water resource organizations seek provisions allowing for the public to nominate ONRW and OSRW.
	Protection of Tier 3 waters requires upstream pollution controls and antidegradation controls.	Upstream sources Upstream loadings	This consideration can lead to treating the entire upstream area as Tier 3. However, since most Tier 3 situations involve headwaters streams, this might not be an issue.
	Most states allow some short-term, limited degradation of Tier 3 waters if long-term impacts are avoided.	Short-term impacts Limited impacts Non-significant impacts	Short-term impacts to Tier 3 waters is typically defined as "weeks and months, not years" and almost always less than a year. Limited impacts usually involve short term use of 5 to 10 percent of the available assimilative capacity for pollutant(s) of concern. Enhanced general permit requirements for minor activities (e.g., culvert replacements, utility crossings) can provide a basis for allowing "short-term, temporary, and non-significant" impacts in Tier 3 situations if the requirements are sufficiently stringent, activities are monitored, and requirements for proper BMP selection, siting, installation, operation, and maintenance are in place.

Antidegradation applies to many important regulatory activities within the state such as NPDES permitted activities (particularly "new and/or expanded" point sources including WWTPs, CAFOs, and stormwater), Section 404 permits implemented through 401 certification, and sometimes other regulated activities through local ordinances (septic systems, erosion/sediment control, etc.), state permitted or managed activities on public lands, and nonpoint source controls, including cost effective and reasonable BMPs required (Figure 3).

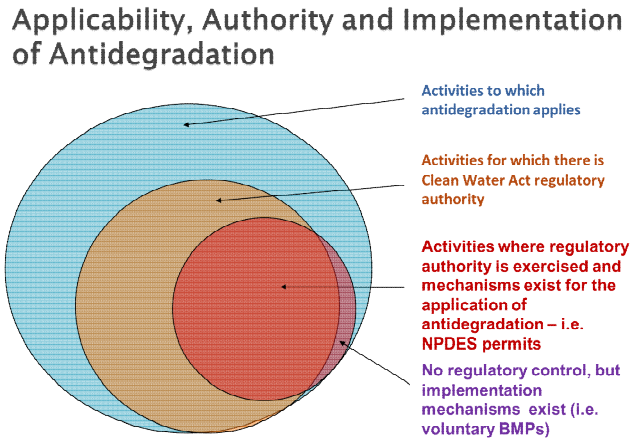

Figure 3. Antidegradation potentially applies to a broad range of activities, including NPDES permits, Section 404 permits, local ordinances, and non-point source controls.

Implementation guidance and other information has been available for some time regarding designating uses, identifying existing and beneficial uses, and implementing water quality criteria in both NPDES and ambient programs (i.e., 303[b], 303[d], TMDLs). However, Alaska, like many states, has not yet developed procedures for implementing the antidegradation policy of the water quality standards program. Federal guidance on antidegradation is also very limited. In an effort to begin learning about antidegradation policies, ADEC contracted Tetra Tech, Inc. to evaluate antidegradation implementation policies of several states across the U.S. spanning a range of alternative procedures (See "*Evaluation of Options for Antidegradation Implementation Guidance", October 6, 2008*) and hosted a conference in Anchorage, Alaska in 2009, which was intended to inform policy makers, wastewater discharge permittees, permit writers, and interested public regarding options for implementation procedures or methods. Specific objectives of that workshop were to: (1) share information about EPA antidegradation policy, (2) identify the pros and cons of various state antidegradation implementation approaches, lessons learned, legal challenges and precedents, and (3) provide a forum for stakeholders to discuss the implementation programs adopted by other states and approaches that might work best in Alaska. That conference was designed for informational purposes only and no regulations were proposed at the workshop.

ADEC also developed Interim Antidegradation Policy Implementation Methods in July 2010 and an *Implementation Procedures Work Plan* in June 2010, which relies on a stakeholder process to develop implementation procedures that are feasible, protective, and transparent.

Issues Regarding Antidegradation Implementation

While the general concepts behind the antidegradation policy in the CWA and ADEC's regulations are readily understandable, implementation of those regulations is challenging. Many concepts within the regulation need to be carefully defined, which is difficult when considering the myriad of waterbodies and the many types of activities of potential concern. Most of the challenges faced by water resource agency personnel implementing federal and state

antidegradation policies revolve around Tier 2 waters because the protection of high-quality waters under Tier 2 of the antidegradation rule is not as straightforward as the approach for Tiers 1 and 3. Antidegradation policies are often interpreted incorrectly as an absolute prohibition on lowering of water quality in *high-quality* waters, i.e., those that exceed minimum levels needed to support existing uses. Such a prohibition could be interpreted as a *no-growth* policy, which EPA has noted is not consistent with its position. The Agency has noted repeatedly that existing regulations and EPA guidance do not prohibit activities that would lower water quality in high-quality waters but rather provide a structure for the systematic evaluation of activities that are expected to lower water quality in certain cases.

Implementing the Tier 2 antidegradation provisions allows states to make decisions after considering all the available information regarding the necessity of the proposed activity and the social, economic, and environmental impacts of lowering water quality. In explaining the intent of its *Great Lakes Water Quality Guidance* on antidegradation, EPA noted that review of potentially degrading activities under a state's antidegradation policy is, "intended to ensure that any lowering of water quality is necessary, that the lowering of water quality is minimized and that desirable economic and social benefits accrue to the area affected by the lowered water quality as a result of the lowering of water quality."

Perhaps not surprisingly, antidegradation implementation issues often arise within a permitting context, such as a request by a municipal authority or industry to expand (i.e., increase the flow) an existing wastewater discharge, or construct a new discharge on a waterbody. The following hypothetical example illustrates many of the implementation issues that a state needs to address:

> A city wants to double the size and discharge flow of their existing wastewater treatment plant (WWTP) to address concerns regarding predicted population growth over the next 20 years. The WWTP discharges to a stream known to support salmon spawning and rearing. What should the state consider in terms of evaluating this permit request?

To answer this question, the state would need to answer several other questions such as:

- What is the current water quality condition of the waterbody? How is current water quality condition defined?
- Should this waterbody be classified "high quality" or Tier 2? On what basis?
- If the waterbody is a Tier 2 water, what type of data and analysis are needed to demonstrate that the expanded discharge will not cause significant degradation to the high water quality present there?
- How is "significant degradation" defined? When does a predicted decrease in water quality become significant degradation?
- If the water quality is predicted to be degraded somewhat because of the expanded WWTP, how can the city demonstrate that the degradation is necessary due to "important economic or social development"? How is "important economic or social development" defined?

- To what extent should the city consider alternatives to doubling their treated effluent flow? Are there feasible non-degrading alternatives available that would accomplish the same objective?

The questions listed above demonstrate some of the nuances of antidegradation policy that need to be defined and evaluated when implementing the policy. In general, antidegradation implementation issues can be grouped according to the following four basic categories:

1. What triggers an antidegradation review?
    a. de minimis vs. significant degradation – should the level of review and documentation be tiered to the level of potential degradation?
    b. Presumptive compliance – should certain projects be exempt from analysis?
    c. Should reissued permits require antidegradation analysis if the analysis was not performed for previous permit versions, if there is no change to the discharge?

2. How are waters designated as low (Tier 1) and high quality (Tier 2) waters?
    a. Parameter-by-parameter or waterbody as a whole?
    b. What information is needed to determine baseline water quality?
        i. How much information is needed to make the determination and what level of statistical analysis will be performed?
        ii. What percentage of water quality exceedances determines the tier?
        iii. How is seasonal variation in water quality addressed?
        iv. How can data collection costs be minimized?

3. How are OSRW or ONRW (Tier 3) waters designated? What process should be used to nominate, evaluate and designate an ONRW and who is responsible for each of these steps and the final decision?

4. As part of wastewater discharge permitting, what should be included in an antidegradation analysis to evaluate the potential degradation and determine whether or not degradation can be authorized? Should the level of review be different depending on the nature of the proposed discharge?
    a. How should DEC evaluate the economic/social benefits of a project? What information is readily available and what factors should be considered? What level of information should be required of applicants?
    b. When should DEC consider other point and non-point source discharges to the waterbody? What level of review and documentation is needed?
    c. When is an alternatives analysis 18 AAC 70. 015 (a)(2)(D) necessary? What level of analysis is necessary? Can other documents (Environmental Impact Statements, etc.) meet the need?

In summary, antidegradation is one of the three legs of the water quality standards program (designated uses and water quality criteria being the other legs) and is a critical component for implementing the Clean Water Act goals. While an antidegradation policy is available in Alaska, implementation of that policy is in development. As with most states, implementation of antidegradation policy in Alaska is challenging and complex, requiring a stakeholder process to

make it fair, feasible, and meaningful. While some of the challenges are technical in nature (e.g., how to measure baseline water quality or changes to assimilative capacity), other decisions are clearly socio-political (e.g., what factors should determine whether a waterbody merits ONRW or Tier 3 status?). As ADEC moves forward in the process of developing procedures for implementing antidegradation, it will be important that they obtain input from the various stakeholder communities using a transparent process.

Key Antidegradation Concepts & Implementation Issues

Jerry Diamond and
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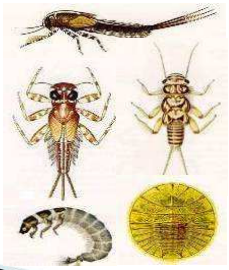
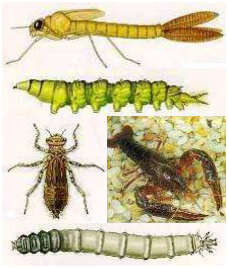
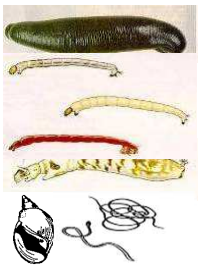
1

Clean Water Act Goals

- "Restore and maintain the chemical, physical and biological integrity of the Nation's waters"
- "Water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water" (*fishable/swimmable goal)*

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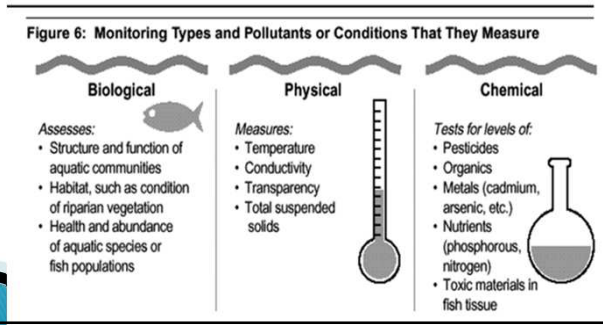
CWA WQS: Purposes/Uses

- Benchmarks for monitoring/assessment
- Basis for water quality-based effluent limits for point sources
- Program/project evaluation (NPDES, 319, etc.)
- Goals for TMDLs (and non-CWA remediation)



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Water Quality Standards Consist of 3 Parts:

- Designated uses (e.g., aquatic life use, drinking water, agricultural water supply, recreation, etc.)
- Water quality criteria (dissolved oxygen, copper, whole effluent toxicity, etc.)
- **Antidegradation policy and implementation methods, 40 CFR 131.12**
  - Most states have a policy; implementation is challenging.

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Where do you find DEC's Water Quality Standards?

Alaska water quality standard (WQS) regulations are generally found in two documents:

1) Water Quality Standards Regulations
(18 AAC.70.015)
http://www.dec.state.ak.us/regulations/index.htm

2) Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances (Toxics Manual). The Toxics Manual is adopted by reference as a part of the WQS.
http://www.dec.state.ak.us/water/wqsar/wqs/index.htm

What is the purpose of Antidegradation?

1. Protect Existing Uses
2. Protect water quality that exceeds that necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water; i.e., Protect "High Quality Waters"
3. Protect waters of exceptional ecological or recreational significance as outstanding national resource waters "ONRWs"

6

Federal Antideg Reg @ 40 CFR 131.12

- States must have both an "antidegradation policy" and "methods for implementing" the policy
- **Tier I:** "Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected"
- **Tier II:** Where "quality of the waters exceed levels necessary," degradation allowed only after:
  - Demonstrating "important economic or social development" in area where water is located
  - Intergovernmental coordination & public participation
  - Achieving "highest statutory and regulatory requirements" for point sources and "all cost effective and reasonable" BMPs for nonpoint sources
  - Protection of minimum WQC ("Tier I")
- **Tier III:** No permanent degradation of ONRWs allowed

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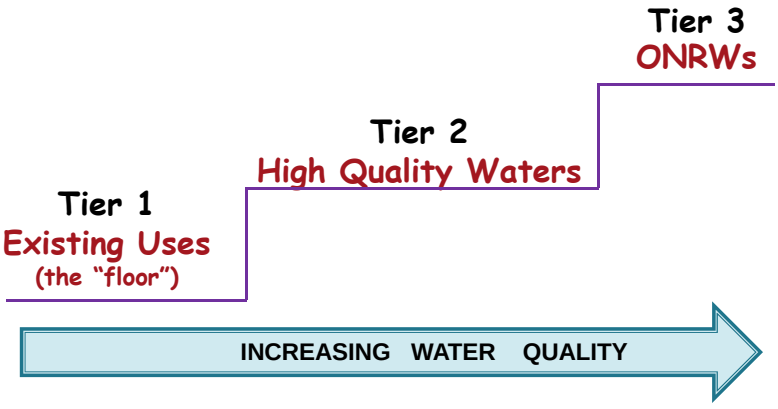
Three goals of antidegradation correspond to 3 Tiers



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Tier 1: Protect Existing Uses

- Existing uses and the level of water quality necessary to protect existing uses must be maintained and protected.
- Existing uses are those uses actually attained in the waterbody on or after 11/28/75, whether or not they are included in the WQS.

9

Tier 1Waters

- Cannot allow loss of any existing use
- Cannot allow water quality to drop below levels needed to maintain existing use
- Applies to all waters, regardless of use designation

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Tier 2: High Quality Waters

- Maintain and protect existing water quality that is better than necessary to support the goals of the CWA, **but…**
- Allows the lowering of water quality if the State finds that lowering of water quality is necessary to accommodate important economic and social development in the area of the water

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Tier 2: Use of Assimilative Capacity Is Not a Right

- "Brakes" slide from really good WQ to barely meeting WQC by saying you can't degrade WQ unless:
  - Point sources are meeting relevant technology-based limits
  - Have "achieved all cost-effective and reasonable best management practices for nonpoint sources"
  - Allowing lower WQ is "necessary to accommodate important economic or social development"
  - Gone through public review and comment

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High Quality Waters

Decision to degrade High Quality Waters requires:

- intergovernmental coordination
- public participation
- demonstration that the activity is important for economic and social development
- demonstration that lowering water quality is necessary to accommodate that development

State must still meet:

- the highest statutory and regulatory requirements for all new and existing point sources
- all cost-effective and reasonable best management practices for nonpoint source control

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a(2) Allows high quality waters to be lowered by regulated activities (Tier 2)

Five elements to antidegradation analysis:

A. Economic and Social Development: "Allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located"

B. Water Quality Criteria: "Except as allowed under this subsection, reducing water quality will not violate the applicable criteria of 18 AAC 70.020 or 18 AAC 70.235. or the whole effluent toxicity limit in 18 AAC 70.030"

C. Protect Existing Uses: "the resulting water quality will be adequate to fully protect existing uses of the water"

18 AAC 70.015 (a)(2) (A-E))

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a(2) Allows high quality waters to be lowered by regulated activities (Tier 2)

Five elements to antidegradation analysis:

D. Pollution Prevention and BMPs: "The methods of pollution prevention, control, and treatment found by the department to be the most effective and reasonable will be applied to all wastes and other substances to be discharged; and"

E. Treatment: "All waste and other substances discharged will be treated and controlled to achieve
(i) For new and existing point sources, the highest statutory and regulatory requirements; and
(ii) for nonpoint sources, all cost-effective and reasonable best management practices"

18 AAC 70.015 (a)(2) (A-E))

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Tier 3: ONRW

- States must provide an ONRW level of protection in their antidegradation policies, but…
  - No federal requirement that any waterbody be designated an ONRW.
- Generally means no new or increased discharges, unless short term and temporary
- Existing uses must be protected
- Existing discharges or other activities do not preclude ONRW designation

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Tier 3: No Degradation for ONRW

- Applies only to waters classified as Outstanding National Resource Waters (ONRW)
  - This classification "overlays" designated uses
  - Candidates include, but are not limited to: "waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance"
- Only minor & temporary decreases in water quality are allowed

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Some ONRW Options

- Must meet or exceed all water quality criteria
- Outstanding water quality is not a prerequisite
- Threatened or endangered species are known to be associated with the waterbody
- Exceptional recreational or ecological significance because of its unique attributes
- Location, previous special designations, aesthetic or spiritual value, etc.
- All waterbodies within wilderness areas, state and federal parks, etc.

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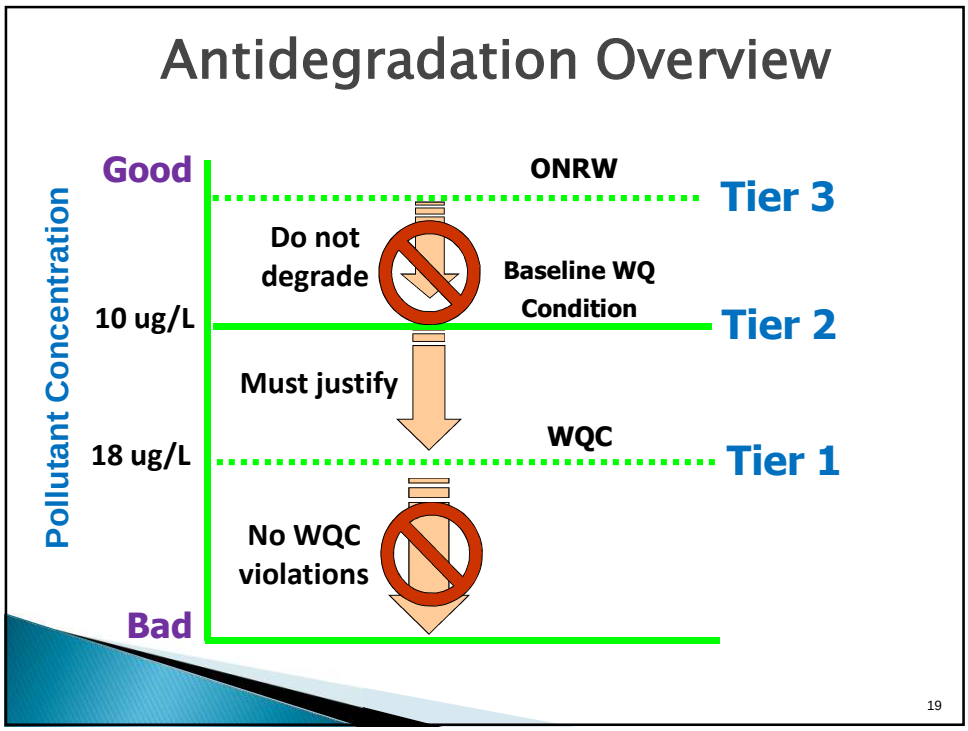
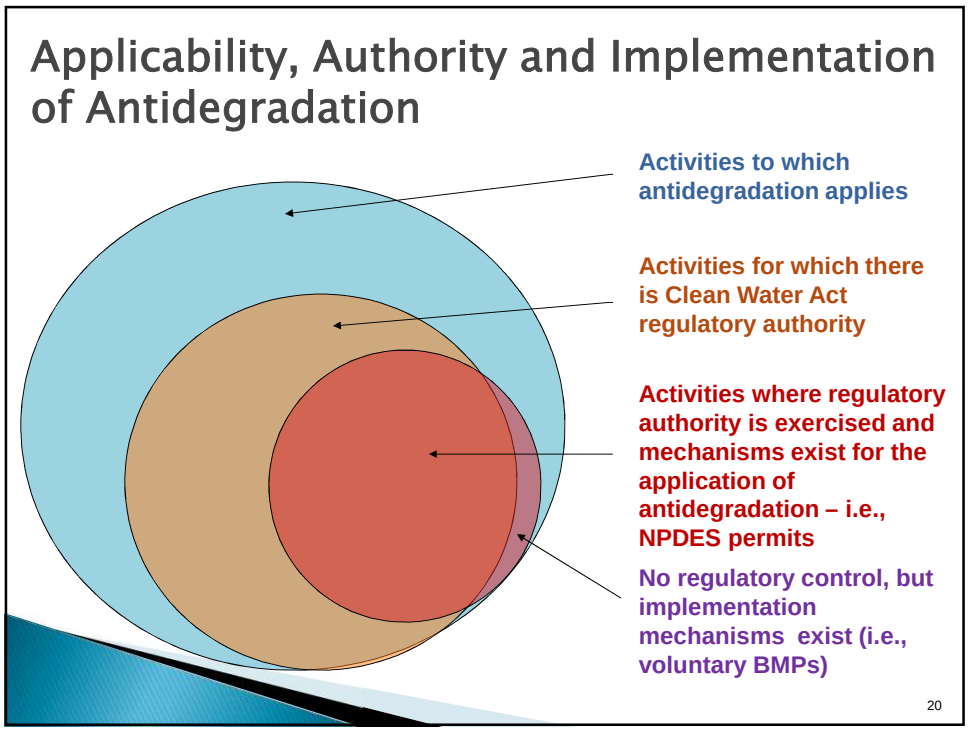

Antidegradation Overview
Pollutant Concentration
Good
Bad
ONRW
Tier 3
Do not degrade
Baseline WQ Condition
10 ug/L
Tier 2
Must justify
WQC
18 ug/L
Tier 1
No WQC violations
19


Applicability, Authority and Implementation of Antidegradation
Activities to which antidegradation applies
Activities for which there is Clean Water Act regulatory authority
Activities where regulatory authority is exercised and mechanisms exist for the application of antidegradation – i.e., NPDES permits
No regulatory control, but implementation mechanisms exist (i.e., voluntary BMPs)
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Antidegradation Applies to:

- NPDES permitted activities
  - General and individual
  - Mostly "new and/or expanded"
  - WWTPs, CAFOs, stormwater, etc.
  - Permit renewals in some cases
- Section 404 permits
  - Implemented through 401 certification
  - Broader assessment focus
- Other "regulated" activities
  - Local ordinances (septic systems, erosion/sediment, etc.)
  - State permitted or managed activities on public lands
- Nonpoint sources
  - Cost effective and reasonable BMPs required
- Revision of state WQ standards, variances, etc.

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Antidegradation Review Triggers

- New or expanded discharges
  - includes not only increased "pollutant loading", but also "pollution" that causes diminished integrity of the water resource (e.g., hydrological changes impacting habitat)
- An application to lower water quality beyond what has previously been allowed through review
  - e.g., logging operations, new or expanded dairy operation
  - Site-specific natural condition-based water quality criteria??

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Antidegradation implementation methods may be part of the WQS regulation, or in other documents.

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What Does Antideg Mean for Permits?

- **Dilution calculations** for NPDES discharges
  - Often calculated at WQ criteria, not "antideg limit"
  - Lowering WQ to baseline WQ criteria must be accompanied by alternatives analysis and economic/social justification
  - Permits granting excessive & unused pollutant loads might be challenged
- **Management** of general/nationwide permits
  - Activities must ensure antideg protection
- **Oversight** of other state-managed activities
  - Nonpoint sources must achieve "all cost-effective and reasonable" BMPs

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What Does Antideg Mean for Water Quality Assessment?

- More emphasis on **characterizing "baseline" water quality (BWQ)** prior to issuing permits
  - BWQ is essential for measuring impacts
  - Can be based on individual parameters or waterbody "designation"
- Greater need for **watershed-wide assessments and modeling** of individual/cumulative impacts
  - Downstream effects on other waterbody segments require a holistic approach
- Increasing focus on **coordination among assessment and permitting staff**
  - Can watershed-wide assessment and permitting help?

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What Does Antideg Mean To The Courts?

- NPDES authority must conduct antideg reviews prior to allowing (i.e., permitting) degradation
- States can't issue blanket "Tier I Only" designations to waterbodies without justification
- Exceptions for certain categories of activities have been deemed unacceptable
- Activities conducted under general permits require individual antideg reviews unless otherwise justified
- States can establish a *de minimis* allowance for use of assimilative capacity (e.g., 10%) without antideg review
- Nonpoint BMPs are OK if they are installed and maintained in accordance with an established program

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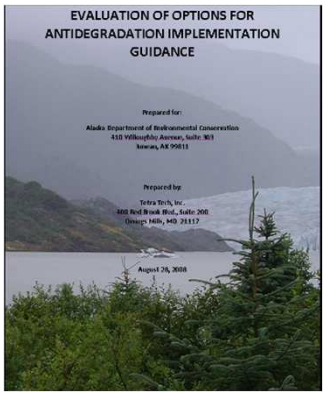
Tetra Tech – ADEC Project

✓**Provide information that could be used by DEC to develop an antidegradation implementation plan**

✓**Review several other States' implementation documents**

✓**Develop options for DEC's implementation methods**

http://www.dec.state.ak.us/water/wqsar/wqs/pdfs/Antidegradation_tetratech_final.pdf



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Water Quality Antidegradation Implementation Conference

Alaska Department of Environmental Conservation, Division of Water & Tetra Tech

Anchorage, Alaska

December 2-3, 2009

http://www.dec.state.ak.us/water/wqsar/wqs/antidegconference.htm

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Antidegradation Final Implementing Procedures Work Plan
December 2011

- DEC will establish a workgroup representing key interests in Alaska.
- Two-phase development process:
  - develop a preferred conceptual approach in Phase 1;
  - develop required rulemaking and, perhaps, legislative processes necessary in Phase 2 to enact the approach

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Questions?

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Overview of Key Implementation Issues

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Key DEC Implementation Issues Related to Antidegradation

- **What activities or proposed activities trigger an antidegradation review?**
  - Can some permitted activities be exempt from antideg review?
- **How is existing (or "baseline") water quality determined?**
  - Suite of parameters
  - Biological measures
  - Combination of physicochemical and biological indicators
- **How are Outstanding National Resource Waters (Tier 3) identified?**
  - Determined through legislative process
  - Determined through DEC process/assignments
- **How is "important economic or social development" defined?**
  - What is considered a satisfactory demonstration?
  - What determines whether a requested activity is "necessary"?

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Key DEC Implementation Issues Related to Antidegradation

- **What should be the requirements for an alternatives analysis?**
  - Ties in with socioeconomic justification
- **How are waterbody tiers assigned?**
  - Parameter-by-parameter
  - Waterbody-by-waterbody
- **How much lowering of water quality is acceptable and how determined?**
  - de minimis
  - Predicted effects on loads or assimilative capacity
- **What process is used to meet public participation requirements?**
  - What should be included in the public notice?
  - Should there be intergovernmental coordination? EPA? USFWS (endangered species)? NOAA (essential fish habitat)? Tribal outreach?

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Baseline or Existing Water Quality

- Many State procedures are similar to those used to develop TMDLs
- For some states: where background data are limited, segment is assumed to be high quality and subject to Tier 2 protection
- In some states, applicant must collect baseline data
- For Alaska: monitoring data are limited; determining baseline may be challenging

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Antidegradation Baseline and Water Quality Assessment

- More emphasis on characterizing **"baseline"** water quality prior to issuing permits
  - Essential for measuring or predicting impacts
  - Can be based on individual parameters or waterbody designation
- Greater need for watershed-wide assessments and modeling of individual/cumulative impacts
  - Downstream effects on other waterbody segments require a holistic approach
- Increasing focus on coordination among assessment and permitting staff as well as with other organizations

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ONRWs – Tier 3 Waters

- States that have designated ONRWs generally locate them in national or state parks
- Alaska has **many** surface waters that are located in national or state parks
  - No Tier 3 waters designated so far
  - Stakeholder issue: little or no development allowed in Tier 3 waters (no degradation)
  - How much watershed area should be set aside for Tier 3 waters?

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The Option of Tier 2.5

- Several States identify an intermediate Tier between 2 and 3 ("2.5")
  - Waters approaching Tier 3 quality but allows some development
  - More palatable to diverse stakeholders than Tier 3 in some cases
  - Minor degradation allowed?
  - What criteria or requirements should be in place to maintain and protect Tier 2.5 status?

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Important Economic or Social Development

- For many States, factors include:
  - Employment (i.e., increasing, maintaining, or avoiding a reduction)
  - Increased production
  - Improved community tax base
  - Housing improvement/increases
  - Correction of an environmental or public health problem

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Important Economic or Social Development

Oregon:

- Also uses local economy, household income, indirect effects to other businesses, and increases in sewer fees as indicators
- Applicant must provide enough information to allow for a financial impact analysis to assess whether lowered water quality has socioeconomic benefits that outweigh environmental costs

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Important Economic or Social Development

Wyoming:

- "If the applicant submits evidence that the activity is important for development, it shall be presumed important unless information to the contrary is submitted in the public review process."

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What types of alternatives should be considered?

For example:

- Process changes to eliminate additional pollutant discharges
- Additional treatment facilities or structures to lower pollutant loads
- Relocating the discharge to another site or waterbody

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Should there be a cost threshold for evaluating alternatives?

For example, alternative must be adopted if:

- Its cost is within:
  - 10 percent of the proposed activity?
  - 15 percent?
  - 20 percent?

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Identification of Tiers Parameter-by-parameter or Waterbody-by-waterbody

- Parameter-by-parameter approach
  - relatively easy to determine (assuming data are available)
  - could present a complex "bookkeeping" exercise requiring at least some basic modeling
  - Requires criterion or numeric standard for a parameter
- Waterbody-by-waterbody approach
  - more holistic approach; does not require numeric criteria
  - simpler to track and maintain
  - related more directly to the beneficial uses that exist
  - requires more information to determine whether a given activity will potentially impact a Tier 2 water

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Identification of Tiers State Examples

Arizona:

- Tier 1 and Tier 2 protection are applied on a pollutant-by-pollutant basis
  - e.g., a stream can be Tier 1 for dissolved oxygen and Tier 2 for ammonia and metals
- Tier 1 protection categorically applies to all non-perennial surface waters

Oregon:

- High quality waters have water quality that meet or is better than all water quality standards

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Identification of Tiers State Examples

West Virginia:

- Protection based on minimum uses being attained, not numeric water quality
- A water segment on the state's 303(d) list may be afforded Tier 2 protection:
  - e.g., a waterbody is impaired for recreational uses due to high bacteria concentrations but still protected at Tier 2 levels for dissolved oxygen and metal concentrations if actual values for these exceeded minimum water quality criteria

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Identification of Tiers State Examples

Pennsylvania:

- Should have "suitable" chemical or biological conditions
- For chemical: high quality if long-term water quality for 12 chemical parameters better than necessary to support propagation of fish, shellfish, wildlife, and recreation
- For biological: one of these must be met:
  - site has macroinvertebrate community score ≥ 83% of reference or
  - water is a designated Class A wild trout stream

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Identification of Tiers: Alaska

As of draft implementation plan (7/14/2010):

- Parameter-by-parameter approach
- Considering waterbody-by-waterbody approach
- If no baseline data available, assume water is Tier 2 when doing antideg review for a permit

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What Constitutes Significant Degradation in Tier 2 waters?

- Percent change in ambient concentrations predicted at the appropriate critical flow condition(s)
- Difference between existing ambient quality and ambient quality that would occur if all point sources were discharging at permitted loading rates
- Percent change in loadings
  - new or expanded loadings compared to total existing loadings to the segment;
  - proposed permitted loadings compared to the existing permitted loadings for existing facilities
- Percent reduction in available assimilative capacity
- Predicted impacts to aquatic biota

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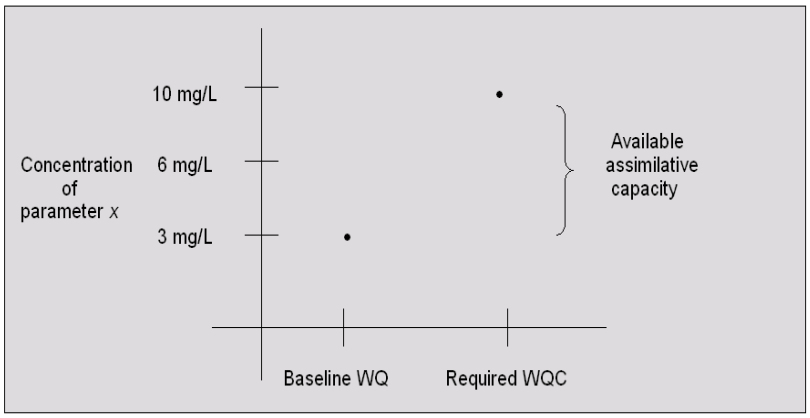
Assimilative Capacity



Simplified Representation of Waterbody Assimilative Capacity for Parameter *x*

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CHAPTER 2: THE MODEL ANTIDEGRADATION IMPLEMENTATION PROCEDURE[1]

PART I. INTRODUCTION

These antidegradation procedures provide detailed methods and guidance to be followed by the Water Quality Board (the Board) and the Water Quality Division (the Division) in implementing the state antidegradation policy found at [insert appropriate citation]. In all cases, applicable technology and water quality-based requirements are to be implemented in combination with the antidegradation requirements described in this document.

Implementation of state and federal antidegradation requirements serves to promote the maintenance and protection of existing surface water quality. Under this program. all "waters of the state" are provided one of four different levels of antidegradation protection. The level of protection that is provided to a specific segment depends upon a number of factors discussed in detail below. At a minimum, all waters are subject to a base level of protection (known as tier 1 or existing use protection); some waters may qualify only for this level of protection. Antidegradation requirements are triggered whenever a *regulated activity* is proposed that may have some effect on surface water quality. Such activities are reviewed to determine, based on the level of antidegradation protection afforded to the affected waterbody segment, whether the proposed activity should be authorized.

Antidegradation requirements are triggered whenever a regulated activity is proposed that may have some effect on surface water quality.

This guidance has three principal components. First, key terms are defined. Second, the procedures to be followed in completing an antidegradation review are presented. Finally, a number of questions and answers are included to further illustrate how these antidegradation implementation procedures will be applied. A copy of the antidegradation worksheet that the Division will use to document review findings is attached.

[1] This chapter of the guidance is intended to provide a recommended example of an antidegradation implementation procedure. It includes examples of each of the types of provisions that EPA Region VIII considers essential. Adoption (with or without modification) of this model procedure is recommended by the Region.

PART II. DEFINITIONS

An **Antidegradation** Review is the process by which the state determines that antidegradation requirements are satisfied for a given regulated activity that may have some effect on surface water quality.

Assimilative capacity is the increment of water quality (in terms of concentration), during the appropriate critical condition(s), that is better than the applicable numeric criterion.

Bioaccumulative toxic substances are defined as substances with bioconcentration factors (BCFs) greater than 250.

Bioconcentration Factor (BCF) is the ratio of a substance's concentration in tissue versus its concentration in water, in situations where the food chain is not exposed or contaminated. For nonmetabolized substances, it represents equilibrium partitioning between water and organisms.

Designated use means a use that is specified in water quality standards as a goal for the waterbody segment, whether or not it is currently being attained.

Existing use means a use that is actually attained in the waterbody on or after November 28, 1975, whether or not it is included in the water quality standards.

High quality water means a waterbody that meets the state's test of "high quality," which is discussed in paragraphs VI(A)(2) and (3) of this guidance. In genera!, waters whose existing quality is better than necessary to support fishable/swimmable uses will be considered "high quality."

Outstanding National Resource Water (ONRW) is a waterbody that has been identified as possessing outstanding ecological or recreational attributes, and has been design&ted as an ONRW in the state water quality standards.

Outstanding State Resource Water (OSRW) is a waterbody that has been identified as possessing outstanding ecological or recreational attributes and has been designated as an OSRW in the state water quality standards.

Reasonable Alternatives shall be identified based on case-specific information. Generally speaking, non-degrading or less-degrading pollution-control alternatives shall be considered reasonable where the costs of such alternatives are less than 110 % of the costs of the pollution control measures associated with the proposed activity.

Regulated activity includes any activity that requires a permit or a water quality certification pursuant to state or federal law (e.g., CWA § 402 NPDES permits, CWA § 404 dredge and fill permits, any activity requiring a CWA § 401 certification), any activity subject to nonpoint source control requirements or regulations, and any activity which is otherwise subject to state regulations[1] that specify that the antidegradation review process is applicable. For purposes of this implementation procedure, the term "proposed activity" means a proposed activity that is also a regulated activity.

Trading means establishing upstream controls to compensate for new or increased downstream sources, resulting in maintained or improved water quality at all points, at all times, and for a!! parameters. Trading may involve point sources, nonpoint sources, or a combination of point and nonpoint sources.

PART III. THE ANTIDEGRADATION REVIEW PROCESS

The Division will conduct some level of antidegradation review for all regulated activities that have the potential to affect existing water quality. The specifics of the review will depend upon the waterbody segment that would be affected, the tier of antidegradation applicable to that waterbody segment, and the extent to which existing water quality would be degraded.

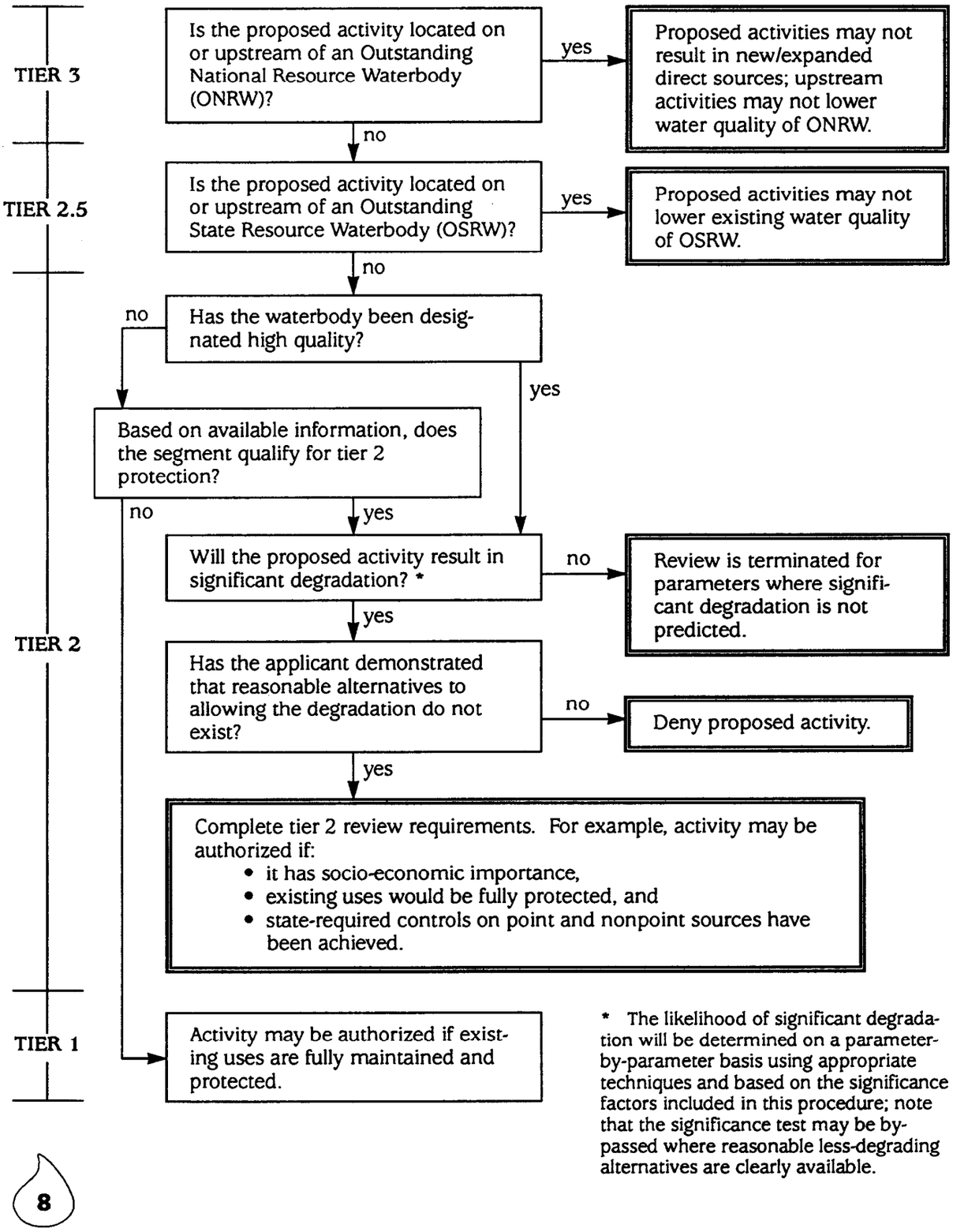
The sequence of steps to be completed by the Division in conducting an antidegradation review is presented in Figure 1. Only major antidegradation program requirements are represented in Figure 1. In conducting an antidegradation review, the first task that will be addressed by the Division is to determine which tier of antidegradation applies. This is accomplished, as described in detail below, based either on the antidegradation designation which has been assigned to the waterbody (i.e. where such a designation has been made) or on whether the existing quality of the segment is better than necessary to support "fishable/swimmable" uses.

Once the correct tier of requirements is identified, the Division determines whether authorizing the proposed activity would be consistent

[1] Such regulations can include the antidegradation policy included in a state's water quality standards. Using this approach, an antidegradation review may be required For any and all activities that may affect water quality (i.e.. including those activities not otherwise subject to control regulations/requirements). For the sake of clarity. EPA recommends that the activities requiring an antidegradation review be discussed in the antidegradation policy or implementation procedure. Antidegradation procedures should specifically state whether, and to what extent, activities which would not otherwise be regulated are subject to antidegradation review requirements (see the discussion of this topic in Chapter 4 and Appendix 3).

FIGURE 1

ANTIDEGRADATION IMPLEMENTATION FLOW CHART



with state antidegradation requirements. The major conclusions of the Division's review are documented using an antidegradation review worksheet, a copy of which is attached to this implementation procedure. Based upon the review findings, a preliminary decision is made by the Division and subjected to intergovernmental coordination and public participation. Public participation occurs regardless of the outcome of the preliminary decision (i.e., whether the proposed activity would be authorized or denied).

The Division then considers public comments and reaches a final decision regarding whether to authorize the proposed activity pursuant to the state antidegradation requirements. The substance and basis of the final decision by the Division are documented in the administrative record. Below, the procedures to be followed by the Division in reaching a preliminary decision under each tier of antidegradation are described in detail.

PART IV. TIER 3 PROCEDURES

A. Waters Qualifying for ONRW Protection

(l) Qualification Criteria

Segments will be subject to tier 3 protection requirements only where an ONRW designation has been assigned by the Board through the state rulemaking procedures. The factors to be considered in determining whether to assign an ONRW designation may include the following: (a) location (e.g., on federal lands such as national parks, national wilderness areas, or national wildlife refuges), (b) previous special designations (e.g., wild and scenic river), (c) existing water quality (e.g., pristine or naturally-occurring), (d) ecological value[1] (e.g., presence of threatened or endangered species during one or more life stages), (e) recreational or aesthetic value (e.g., presence of an outstanding recreational fishery), and (f) other factors that indicate outstanding ecological or recreational resource value (e.g., rare or valuable wildlife habitat). Where determined appropriate, the ONRW designation may be applied to an entire category of waters (e.g., a wilderness area or areas).

(2) Water Quality Requirements

Outstanding water quality is not a prerequisite for ONRW designation. The only requirement is that the segment have outstanding value as an aquatic resource, which may derive from the presence of exceptional scenic or recreational attributes, or from the presence of

[1] States should consider ONRW or OSRW designations for segments selected as reference sites (e.g., to define biological/ecological integrity for a particular ecoregion).

unique or sensitive ecosystems that have naturally low water quality (i.e., as measured by conventional parameters).

(3). Public Nomination

The public may nominate any state water for ONRW protection at any time by sending a written request to the following address: [insert appropriate address]. The written request should explain why an ONRW designation is warranted based on one or more of the factors identified above.

B. Direct Sources to ONRWs

Any proposed activity that would result in a permanent new or expanded direct source of pollutants to any segment which has been designated as an ONRW is prohibited.

(1) Prohibition on New or Expanded Sources

Any proposed activity that would result in a permanent new or expanded direct source of pollutants to any segment which has been designated as an ONRW is prohibited. This prohibition applies to new sources, expansion of existing sources in which treatment levels are maintained, and expansion of existing sources in which treatment levels are increased to maintain existing pollutant loading levels. Regardless of effluent quality, any new or expanded direct source is prohibited.

C. Sources Upstream from ONRWs

(1) No Change in Water Quality Allowed

Any proposed activity that would result in a permanent new or expanded indirect source of pollutants (i.e., an upstream source) to an ONRW segment is prohibited except where such source would have no effect on the existing quality of the downstream ONRW segment. Effects on ONRW water quality resulting from upstream sources will be determined based on appropriate techniques and best professional judgment. Factors that may be considered in judging whether ONRW quality would be affected include: (a) percent change in ambient concentrations predicted at the appropriate critical condition(s), (b) percent change in loadings (i.e., the new or expanded loadings compared to total existing loadings to the segment), (c) percent reduction in available assimilative capacity, (d) nature, persistence, and potential effects of the parameter, (e) potential for cumulative effects, and (f) degree of confidence in the various components of any modeling technique utilized (e.g., degree of confidence associated with the predicted effluent variability).

(2) Trading

A proposed activity that will result in a new or expanded upstream source may be allowed where the applicant agrees to implement or

finance upstream controls of point or nonpoint sources sufficient to offset the water quality effects of the proposed activity. Where such trading occurs upstream of an ONRW segment, tier 3 requirements will be considered satisfied where the applicant can show that water quality at all points within the study area will be either maintained or improved. The Division will document the basis for the trade through a Total Maximum Daily Load (TMDL) pursuant to CWA § 303(d) requirements. Such TMDLs will include an appropriate margin of safety. Such a margin of safety will address, in particular, the uncertainties associated with any proposed nonpoint source controls, as well as variability in effluent quality for point sources. See definition of trading in Part II.

(3) Information Requirements
The applicant may be required to provide information sufficient to evaluate the potential effects of the proposed activity on downstream ONRWs. The information that will be required in a given situation will be identified on a case-by-case basis by the Division.

D. Temporary and Limited Effects

(1) Guidelines
A direct or upstream source that would result in a temporary *and* limited effect on ONRW water quality may be authorized. The decision regarding whether effects will be temporary and limited will be handled on a case-by-case basis. As a *non-binding* rule of thumb, activities with durations less than one month *and* resulting in less than a 5% change in ambient concentration will be deemed to have temporary and limited effects. Decisions on individual proposed activities may be based on the following factors: (a) length of time during which water quality will be lowered, (b) percent change in ambient concentrations, (c) parameters affected, (d) likelihood for long-term water quality benefits to the segment (e.g., as may result from dredging of contaminated sediments), (e) degree to which achieving applicable water quality standards during the proposed activity may be at risk, and (f) potential for any residual long-term influences on existing uses.

PART V. TIER 2.5 PROCEDURES

A. Waters Qualifying for OSRW Protection

(1) Qualification Criteria
Segments will be subject to tier 2.5 protection requirements only where an OSRW designation has been assigned by the Board through the state rulemaking procedures. The factors to be consid-

ered in determining whether to assign an OSRW designation may include the following: (a) location (e.g., on federal lands such as national parks. national wilderness areas, or national wildlife refuges), (b) previous special designations (e.g., wild and scenic river), (c) existing water quality (e.g., pristine or naturally-occurring), (d) ecological value (e.g., presence of threatened or endangered species during one or more life stages), (e) recreational or aesthetic value (e.g.. presence of an outstanding recreational fishery), and (f) other factors that indicate outstanding ecological or recreational resource value (e.g., rare or valuable wildlife habitat). Where determined appropriate, the OSRW designation may be applied to an entire category of waters (e.g., all waters located within a state or national park).

The public may nominate any state water for OSRW protection at any time via a written request that explains why such a designation is warranted.

(2) Water Quality Requirements

Outstanding water quality is not a prerequisite for OSRW designation. The only requirement is that the segment have outstanding value as an aquatic resource, which may derive from the presence of exceptional scenic or recreational attributes, or from the presence of unique or sensitive ecosystems that have naturally low water quality (i.e., as measured by conventional parameters).

(3) Public Nomination

The public may nominate any state water for OSRW protection at any time by sending a written request to the following address: [insert appropriate address]. The written request should explain why an OSRW designation is warranted based on one or more of the factors identified above.

B. Direct and Indirect Sources to OSRWs

(1) No Change in Water Quality Allowed

Except as noted below, any proposed activity that would result in a permanent lowering in OSRW water quality is prohibited. This procedure applies to direct and indirect (i.e.. upstream) sources of pollutants to OSRWs. The prohibition applies to new sources and expansion of existing sources in which treatment levels are maintained. Proposed expansions that would also upgrade treatment levels such that existing loading levels will be maintained may be authorized. However, decisions regarding whether to allow new or expanded sources will be made on a case-by-case basis using appropriate techniques and best professional judgment. Factors that may be considered in judging whether OSRW quality would be lowered include: (a) percent change in ambient concentrations predicted at the appropriate critical condition(s), (b) percent change in loadings (i.e., the new

or expanded loadings compared to total existing loadings to the segment), (c) percent reduction in available assimilative capacity, (d) nature, persistence, and potential effects of the parameter, (e) potential for cumulative effects, and (f) degree of confidence in the various components of any modeling technique utilized (e.g., degree of confidence associated with the predicted effluent variability).

(2) Trading

A proposed activity that will result in a new or expanded source may also be allowed where the applicant agrees to implement or finance upstream controls of point or nonpoint sources sufficient to offset the water quality effects of the proposed activity. Where such trading occurs on or upstream of an OSRW segment, tier 2.5 requirements will be considered satisfied where the applicant can show that water quality at all points within the study area will be either maintained or improved. The Division will document the basis for the trade through a TMDL pursuant to CWA § 303(d) requirements. Such TMDLs will include an appropriate margin of safety. Such a margin of safety will address, in particular, the uncertainties associated with any proposed nonpoint source controls, as well as variability in effluent quality for point sources. See definition of trading in Part II.

(3) Information Requirements

The applicant may be required to provide information sufficient to evaluate the potential effects on downstream OSRWs. The information that will be required in a given situation will be identified on a case-by-case basis.

(4) Exceptions

An exception may be made for permanent new or expanded sources that, overall, serve to maintain or enhance the value, quality, or use of the OSRW. Prior to allowing exceptions, the Division shall work with the project applicant to identify the least-degrading alternative. For example, a new or expanded source of water treatment facility effluent associated with a visitor center may be authorized where reasonable non-degrading or less-degrading treatment alternatives to allowing a new or expanded source are not available. The Division shall utilize the procedures included in Part VI(C) to evaluate alternatives. Exceptions will be granted on a case-by-case basis; in general, exceptions will be granted only where uses will be fully protected and effects on existing water quality will be minimal.

C. Temporary and Limited Effects

(1) Guidelines

Activities that would result in a temporary *and* limited effect on OSRW water quality may be authorized. The decision regarding whether effects will be temporary and limited will be handled on a

case-by-case basis. As a *non-binding* rule of thumb, activities with durations less than one month and resulting in less than a 5 % change in ambient concentration will be deemed to have temporary and limited effects. Decisions on individual proposed activities may be based on the following factors: (a) length of time during which water quality will be lowered, (b) percent change in ambient concentrations, (c) parameter affected, (d) likelihood for long-term water quality benefits to the segment resulting from the proposed activity (e.g., as may result from dredging of contaminated sediments), (e) degree to which achieving applicable water quality standards during the proposed activity may be at risk, (f) potential for any residual long-term influences on existing uses, and (g) public use benefits resulting from the proposed activity (e.g., enhancement or expansion of public access, maintenance of the resource).

PART VI. TIER 2 PROCEDURES

A. Waters Qualifying for Tier 2 Protection

(1) Two Qualification Mechanisms

Segments may be afforded tier 2 protection by the state in one of two ways. The first way is for the Board to assign tier 2 protection through a rulemaking action. Where this occurs, a high quality use designation will be added to the state standards for the segment. The sole implication of a high quality designation in the state water quality control program is that it *mandates* application of the tier 2 review requirements described below. The second way to afford tier 2 protection is for the Division to make a determination that this level of protection is warranted during the antidegradation review of a proposed activity. Such decisions will be based on all relevant information including any ambient water quality (i.e., physical, chemical, biological) data submitted by the applicant. The criteria that will be used in identifying high quality tier 2 waters ar described below. The same criteria for making the high quality decision apply regardless of whether the decision is made by rulemaking or during the Division's antidegradation review. Regardless of how the high quality decision is made, the same level of protection and the same procedures are applied.

(2) Qualification Factors

Decisions regarding whether a waterbody is high quality and subject to tier 2 protection requirements will be based on a best professional judgment of the overall quality and value of the segment. In general, waters with existing quality that is better than necessary to support fishable/swimmable uses will be considered high quality and subject to tier 2 requirements. The factors that may be considered in determining whether a segment satisfies the high quality test include the

following: (a) existing aquatic life uses, (b) existing recreational or aesthetic uses, (c) existing water quality for all parameters (i.e. subject to the availability of monitoring data or other information for the segment, upstream segments, or for comparable segments), and (d) the overall value of the segment from an ecological and public use perspective. Note that attainment of *both* aquatic life (fishable) and recreational (swimmable) uses is *not* required in order to qualify as a high quality segment.

(3) Presumptive Applicability

In general, it is presumed that a very large majority of state waters qualify for tier 2 protection. However, there are some waters in the state where neither of the CWA fishable/swimmable goal uses are attained. It is the intent of these procedures to apply only existing use (tier 1) protection to such waters. There also may be waters in the state where one or both of the fishable/swimmable uses are attained, but existing water quality is not "better than necessary" to support the goal uses (i.e., assimilative capacity does not exist for a number of parameters). It is the intent of these procedures to apply only existing use (tier 1) protection to such waters provided that there is no assimilative capacity for *each* of the parameters to be affected by the proposed activity.

In general, it is presumed that a very large majority of state waters qualify for tier 2 protection.

(4) Criteria Exceedences

A difficult question that must be addressed by these procedures is whether occasional exceedences of one or more narrative or numeric water quality criteria constitute nonattainment sufficient to preclude tier 2 protection. In waters where exceedences have occurred and continue to occur for one or more parameters, a judgment will be made based on the factors identified above and in consideration of information submitted by the applicant and by the public. As a general operating rule, tier 2 protection will be applied even where the criteria for some parameters are not always satisfied.

(5) Information Requirements

The applicant may be required to provide monitoring data or other information about the affected waterbody to help determine the applicability of tier 2 requirements based on the high quality test. The information that will be required in a given situation will be identified on a case-by-case basis. Because these procedures presume that tier 2 protection requirements will be applied, such information will typically be required of the applicant only where this presumption is in dispute. Such information may include recent ambient chemical, physical, and biological monitoring data sufficient to characterize, during the appropriate critical condition(s), the existing uses and the spatial and temporal variability of existing quality of the segment for the parameters that would be affected by the proposed activity.

(6) Characterizing Existing Quality

The Division will follow the state procedures used to characterize existing background quality that are used for purposes of developing Total Maximum Daily Loads (TMDLs). The characterization of existing background water quality should appropriately consider spatial and temporal variability. However, where background water column data are limited, the Division may conclude that a segment is high quality and subject to tier 2 protection based on ancillary data such as land use information, population and demographics, geology, presence of point or nonpoint sources, climatological data, or the health of the aquatic community.

(7) Public Nomination

The public may nominate any state water for a high quality designation at any time by sending a written request to the following address: [insert appropriate address]. The written request should explain why a high quality designation is warranted based on the factors identified and discussed in paragraph (2) and (3).

The Division will identify and eliminate from further review only those proposed activities that present insignificant threats to water quality. Proposed activities will be considered significant and subject to tier 2 requirements where significant degradation is projected for one or more water quality parameters.

B. Significant Degradation

(1) Overview

Once it is determined that tier 2 protection applies to a waterbody via one of the two decision mechanisms described above, the next step in the review process is to determine whether the degradation that will result from the proposed activity is significant enough to warrant further review (such as evaluation of alternatives). The factors to be addressed in judging the significance of the proposed activity are identified in paragraph (2) below. Where the significance of the degradation associated with a proposed activity is in dispute, the factors identified in paragraph (2) should also be the focal point of opposing views by the applicant or the public.

(2) Significance Factors

The likelihood that a proposed activity will pose significant degradation will be judged by the Division for all water quality parameters that would be affected by the proposed activity. Such significance judgments will be made on a parameter-by-parameter basis. The Division will identify and eliminate from further review only those proposed activities that present insignificant threats to water quality. Proposed activities will be considered significant and subject to tier 2 requirements where significant degradation is projected for one *or more* water quality parameters. Because determinations of significant degradation are most appropriately made based on case-specific information, these procedures do not provide rigid decision crite-

ria for judging significant changes in water quality. Rather, significant degradation may be demonstrated with respect to any one (or a combination) of the following factors: (a) percent change in ambient concentrations predicted at the appropriate critical condition(s), (b) the difference, if any, between existing ambient quality and ambient quality that would exist if all point sources were discharging at permitted loading rates, (c) percent change in loadings (i.e., the new or expanded loadings compared to total existing loadings to the segment or, for existing facilities only, the proposed permitted loadings compared to the existing permitted loadings), (d) percent reduction in available assimilative capacity, (e) nature, persistence, and potential effects of the parameter, (f) potential for cumulative effects.[1] (g) predicted impacts to aquatic biota, (h) degree of confidence in any modeling techniques utilized, and (i) the difference, if any, between permitted and existing effluent quality.

(i) Required Analyses. Based on one or more of the significance factors identified above, the Division may make determinations of significant degradation based on appropriate modeling techniques coupled with detailed characterization of the existing background water quality. However, determinations of significance need not be complicated, data-intensive, or resource-intensive. It is not the intent of these procedures to require detailed analyses to address each of the factors identified above. Where appropriate, determinations of significance may be based on simple analyses. For example, proposed activities may be judged as insignificant where: (a) available dilution exceeds 100:l , (b) the proposed activity would not result in a significant increase of loadings for any parameter, or (c) there is substantial potential for the proposed activity to result in a net long-term water quality benefit to the segment. Likewise, a significant increase in loadings for any given parameter may be the basis for concluding that significant degradation will occur.

(ii) Persistent Toxics. The significance of proposed new or expanded sources of bioaccumulative or other persistent toxic substances will be judged depending upon, for example, existing loadings of the substances to the segment from all sources. The Division's interpretation of monitoring data or other information

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[1] It is anticipated that most antidegradation reviews will be limited to single sources; however, where multiple new or expanded sources are likely to be proposed within a short time period (e.g., one permit cycle), the Division may base a determination of significance on the cumulative effect of all the proposed sources. Where available, a Total Maximum Daily Load (TMDL) analysis will be used as the basis for the significance determination. Where multiple sources are deemed significant in a cumulative sense, each individual proposed source shall be subject to further tier 2 review. Likewise, where multiple loading increases for a single source occur over time, the cumulative effects of the sum total increase in loading may be the basis for requiring further tier 2 review.

indicating fish tissue or sediment accumulation in the watershed will be considered with respect to judging the significance of new or expanded sources of persistent toxic substances.

(3) General Guidelines

As a non-binding rule-of-thumb, proposed activities that would lower the ambient quality of any parameter by more than 5%, reduce the available assimilative capacity by more than 5%, or increase pollutant loadings to a segment by more than 5% will be presumed to pose significant degradation. The intent of this guideline is to establish a de minimis test of significance and to eliminate from further review only those proposed activities that will result in truly minor changes in water quality.

(4) By-passing the Significance Test

Where available information clearly indicates that reasonable non-degrading or less-degrading alternatives to lowering existing water quality exist, the Division may by-pass the significant degradation requirements and direct the applicant to demonstrate the necessity of the degradation pursuant to Part VI(C) below.'

(5) Trading

The Division may also conclude that a proposed activity will not pose significant degradation based upon the specifics of any upstream/downstream trading that has been agreed to by the project applicant. The Division will document the basis for the trade through a TMDL pursuant to CWA § 303(d) requirements. Such TMDLs will include an appropriate margin of safety. Such a margin of safety will address, in particular, the uncertainties associated with any proposed nonpoint source controls, as well as variability in effluent quality for point sources. See definition of trading in Part II.

(6) Information Requirements

The applicant may be required to provide monitoring data or other information about the affected waterbody and/or proposed activity to help determine the significance of the proposed degradation for specific parameters. The information that will be required in a given situation will be identified on a case-by-case basis. Because these procedures establish a fairly low threshold of significance, in many cases a large data base will not be necessary to determine that a proposed activity will result in significant degradation. The information required may include recent ambient chemical, physical, or biological monitoring data sufficient to characterize, during the appropriate critical condition(s). the spatial and temporal variability of existing

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* By-passing the significance test is an appropriate means of maintaining and protecting existing water quality even where proposed effects on water quality may/will be minor.

background quality of the segment for the parameters that would be affected by the proposed activity, as well as the water quality that would result if the proposed activity were authorized. State TMDL procedures for characterizing existing water quality and projecting future water quality will be the basis for identifying needed information and interpreting available data.

(7) Determine Significance of Proposed Activity

Activities determined to be significant by the Division shall be subject to the tier 2 review requirements described below. If the Division determines that an activity will not pose significant degradation for any parameter, no further antidegradation tier 2 requirements shall apply; however, such activities must still meet all technology and/or water quality based control requirements or conditions of the permit or the water quality certification.

C. Evaluation of Alternatives to Lowering Water Quality

(1) Role of the Division

The primary emphasis of the Division's tier 2 antidegradation reviews will be to determine whether reasonable non-degrading or less-degrading alternatives to allowing the proposed degradation are available. The Division will first evaluate any alternatives analysis submitted by the applicant for consistency with the minimum requirements described below. If an acceptable analysis of alternatives was completed and submitted to the Division as part of the initial project proposal, no further evaluation of alternatives will be required of the applicant. If an acceptable alternatives analysis has not been completed, the Division will work with the project applicant to ensure that an acceptable alternatives analysis is developed.

The primary emphasis of the Division's tier 2 antidegradation reviews will be to determine whether reasonable non-degrading or less-degrading alternatives to allowing the proposed degradation are available.

(2) Role of the Applicant

The applicant of any proposed activity that would significantly lower water quality in a high quality segment is required to prepare an evaluation of alternatives. The evaluation is required, at a minimum, to provide substantive information pertaining to the costs *and* environmental impacts associated with the following alternatives: (a) pollution prevention measures[1] (e.g., substitution of less toxic substances), (b) reduction in scale of the project, (c) water recycle or reuse, (d) process changes, (e) innovative treatment technology

[1] For NPDES permits, completing a pollution prevention audit will be considered an acceptable evaluation of pollution prevention alternatives.

(e.g., land application of wastewater). (f) advanced treatment technology, (g) seasonal or controlled discharge options to avoid critical water quality periods, (h) improved operation and maintenance of existing treatment systems, and (i) alternative discharge locations.

(3) Preliminary Determination

Once the Division has determined that feasible alternatives to allowing the degradation have been adequately evaluated, the Division shall make a preliminary determination regarding whether reasonable non-degrading or less-degrading alternatives are available. This determination will be based primarily on the alternatives analysis developed by the project applicant, but may be supplemented with other information or data. As a *non-binding* rule of thumb, non-degrading or less-degrading pollution control alternatives with costs that are less than 110 % of the costs of the pollution control measures associated with the proposed activity shall be considered reasonable.' If the Division determines that reasonable alternatives to allowing the degradation do not exist, the Division shall continue with the tier 2 review and document the substance and basis for that preliminary determination using the antidegradation review worksheet.

(4) If Reasonable Alternatives Exist

If the Division makes a preliminary determination that one or more reasonable alternatives to allowing the degradation exist, the Division will work with the project applicant to revise the project design. If a mutually-acceptable resolution cannot be reached, the Division will document the alternatives analysis findings and public notice a preliminary decision, based on antidegradation tier 2 requirements, to deny the activity.

(5) Role of Public

Based upon comments and information received during the public comment period, the Division may reverse its preliminary determination regarding the availability of reasonable alternatives to allowing the degradation.

D. Determination of Socio-Economic Importance

(1) Role of the Applicant

The applicant is required to demonstrate the social and economic importance of the proposed activity. The factors to be addressed in such a demonstration may include, but are not limited to, the follow-

[1] In evaluating the applicant's evaluation of alternatives, the Division may rely, in part, on guidance or assistance from EPA Headquarters on the use of economics in the water quality standards program.

ing: (a) employment (i.e., increasing, maintaining, or avoiding a reduction in employment), (b) increased production, (c) improved community tax base, (d) housing, and (e) correction of an environmental or public health problem.

(2) Role of the Division

Prior to authorizing any proposed activity that would significantly lower the water quality of a tier 2 water, the Division shall ensure that the proposed activity will provide important social or economic development in the area in which the waters are located. In making a preliminary determination, the Division will rely primarily on the demonstration made by the applicant. However, the Division may weigh the applicant's demonstration against counterbalancing socio-economic costs associated with the proposed activity, such as projected negative socio-economic effects on the community and the projected environmental effects (i.e., those determined in the significance and/or alternatives analysis decision processes).

(3) Additional Information Requirements

Information available to the Division is not sufficient to make a preliminary determination regarding the socio-economic costs or benefits associated with the proposed activity, the Division may require the project applicant to submit specific items of information needed to support a determination of importance. The types of information required of the applicant will be determined on a case-by-case basis, but may include: (a) information pertaining to current aquatic life, recreational, or other waterbody uses, (b) information necessary to determine the environmental impacts that may result from the proposed activity, (c) facts pertaining to the current state of economic development in the area (e.g., population, area employment, area income, major employers, types of businesses), (d) government fiscal base, and (e) land use in the areas surrounding the proposed activity.

It is anticipated that an effective mitigation plan may, in some cases, allow the state to conclude "importance" and to authorize proposed activities that could otherwise not be authorized pursuant to state antidegradation requirements. Mitigation plans should include criteria for determining success of the mitigation, legal commitment for follow-up monitoring and additional work (if necessary), and where practicable, a commitment to implement the mitigation before the project and water quality degradation are allowed.

(4) Mitigation

The applicant may voluntarily submit a proposal to mitigate the adverse environmental effects of the proposed activity (e.g., in-stream habitat improvement, bank stabilization/upgraded riparian vegetation). Such mitigation plans should describe the proposed mitigation measures and the costs of such mitigation. Such a mitigation plan will not release the Division from its obligation to require any reasonable non-degrading or less-degrading alternatives under Part VI(C) of this procedure, nor will

such plans have any effect on the effluent limitations to be included in any NPDES permit (except possibly where a previously-completed mitigation project has resulted in an improvement in background water quality that affects the water quality-based limit). Such mitigation plans will be developed and implemented by the applicant as a means to further minimize the environmental effects of the proposed activity and to increase its socio-economic importance. It is anticipated that an effective mitigation plan may, in some cases, allow the state to conclude "importance" and to authorize proposed activities that could otherwise not be authorized pursuant to state antidegradation requirements. Mitigation plans should include criteria for determining success of the mitigation, legal commitment for follow-up monitoring and additional work (if necessary), and where practicable, a commitment to implement the mitigation before the project and water quality degradation are allowed.

(5) Preliminary Determination

Once the Division has reviewed available information pertaining to the socio-economic importance of the proposed activity, the Division shall make a preliminary determination regarding importance.[1] If the Division determines that the proposed activity has social or economic importance in the area in which the affected waters are located, the Division shall continue with the tier 2 review and document the substance and basis for that preliminary determination using the antidegradation review worksheet.

(6) If Importance is Found Lacking

If the Division makes a preliminary determination that the proposed activity does not have social or economic importance in the area in which the affected waters are located, the Division will document that antidegradation review finding and public notice a preliminary decision, based upon antidegradation tier 2 requirements, to deny the proposed activity.

(7) Role of Public

Because the socio-economic importance of a proposed activity is a question best addressed by local interests, the Division will give particular weight to the comments submitted by local governments, land use planning authorities, and other local interests in determining whether the balancing of benefits and costs that was the basis for the Division's preliminary decision was appropriate. Based upon comments and information received during the public comment period, the Division may reverse its preliminary determination regarding the social or economic importance of a proposed activity.

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[1] In evaluating the applicant's demonstration of sock-economic importance, the Division may rely, in part, on guidance or assistance from EPA Headquarters on the use of economics in the water quality standards program.

E. Ensure Full Protection of Existing Uses

(1) See Part VII Tier 1 Procedures

Prior to authorizing any proposed activity that would significantly degrade a tier 2 water, the Division shall ensure that existing uses will be fully protected consistent with the tier 1 implementation procedures provided below.

F. Ensure Implementation of State-Required Point and Nonpoint Source Controls

(1) Role Of the Division

Prior to authorizing any proposed activity that would significantly degrade a tier 2 water, the Division shall determine that compliance with state-required controls on all point and nonpoint sources in the zone of influence[1] has been assured. The Division may conclude that such compliance has not been assured where facilities are in noncompliance with their NPDES permit limits. However, the existence of schedules of compliance for purposes of NPDES permit requirements will be taken into consideration in such cases. Where there are nonpoint sources that are regulated activities, the Division shall determine that any *state-required* controls or best management practices have been achieved or that a plan that assures such compliance has been developed.

(2) Preliminary Determination

Based upon available data or other information, the Division will make a preliminary determination regarding whether compliance with state-required controls on point and nonpoint sources in the zone of influence has been assured. If the preliminary determination is that such compliance has been assured, the Division shall continue with the tier 2 review and document the substance and basis for that preliminary determination using the antidegradation review worksheet.

(3) If Controls have not been Achieved

If the Division makes a preliminary determination that compliance with state-required point and nonpoint source controls has *not* been assured, the Division shall document that antidegradation review finding and public notice a preliminary decision, based upon tier 2 requirements, to deny the proposed activity.

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[1] The zone of influence extends upstream and downstream as appropriate for the parameter/waterbody under consideration. Another acceptable approach would be to limit application to those point/nonpoint sources located on the segment.

(4) Role of Public

Based upon comments and information received during the public comment period, the Division may reverse its preliminary finding regarding the degree to which compliance with state-required point and nonpoint source controls has been assured.

PART VII. TIER 1 PROCEDURES

A. Waters Qualifying for Tier 1 Protection

(l) Waters Subject to Tier 1 Requirements

All waters are subject to tier 1 protection. Those which are *only* subject to tier 1 protection are those waters that have not been assigned an ONRW, OSRW. or high quality antidegradation designation by the Board and that do not currently possess the overall water quality or value necessary to meet the high quality test (see Section VI(A) of this implementation guidance). In general, tier l-only waters are those segments where fishable/swimmable goal uses are not attained, or where assimilative capacity does not exist for any of the parameters that would be affected by the proposed activity.

B. Two-Part Requirement

(l) Protect Water Quality and Uses

The state antidegradation policy requires that existing uses, and the water quality necessary to protect existing uses, shall be maintained and protected. This requirement contains two parts: (1) protection of existing uses, and (2) protection of the water quality necessary to maintain and protect existing uses.

C. Ensure Water Quality Necessary to Maintain and Protect Existing Uses

(1) Confirm that Designated Uses Address Existing Uses

Prior to authorizing any proposed activity, the Division shall ensure that water quality sufficient to protect existing uses fully will be achieved. An important decision that must be made by the Division is whether the waterbody currently supports, or has supported since November 28, 1975, an existing use that has more stringent water quality requirements than the currently designated uses. In making this decision, the Division will focus on whether a higher designated use (i.e.. based on the state use designations) should be assigned to the waterbody to reflect an existing use. Where the Division determines that the currently designated uses appropriately reflect the existing waterbody uses, the Division shall document that prelimi-

nary determination using the antidegradation review worksheet (see page 35). In such cases, the water quality control requirements necessary to protect designated uses will be presumed to also fully protect existing uses.

(2) Where Designated Uses do not Address Existing Uses

The procedure outlined in paragraph (1) above presumes that designated uses appropriately address existing uses pursuant to state and federal requirements. Where this is not the case, a revision to state standards may be needed because, pursuant to the state and federal water quality standards regulations, designated uses are required to reflect, at a minimum, all attainable (including currently attained, or existing) uses. Where existing uses with more stringent protection requirements than currently designated uses are identified, the Division will ensure levels of water quality necessary to protect existing uses fully and, at the earliest opportunity, propose that appropriate revisions to the designated uses be adopted into the state water quality standards. However, the Division will not delay tier 1 protection pending the reclassification action.

Where existing uses with more stringent protection requirements than currently designated uses are identified, the Division will ensure levels of water quality necessary to protect existing uses fully and, at the earliest opportunity, propose that appropriate revisions to the designated uses be adopted into the state water quality standards.

(3) Require Water Quality Necessary to Protect Existing Uses

Where the Division determines that the waterbody currently supports, or has supported since November 28, 1975. an existing use that has more stringent water quality requirements than the currently designated uses, the Division shall identify the level of water quality necessary to protect existing uses fully for the parameters in question. The Division's estimate of the level of water quality required will be based on numeric state water quality criteria, narrative state criteria, and/or federal criteria guidance. In general, water quality sufficient to maintain and protect existing uses for the parameters in question will be assured using the same procedures that would have been followed had the water quality standards (i.e.. uses and criteria) been appropriately assigned to begin with. The preliminary findings regarding existing uses and the level of water quality necessary to protect existing uses will be documented using the antidegradation review worksheet.

(4) Trading

A proposed activity that will result in a new or expanded source may also be allowed where the applicant agrees to implement or finance upstream controls of point or nonpoint sources sufficient to offset the water quality effects of the proposed activity. Where such trading occurs, tier 1 requirements will be considered satisfied where the

applicant can show that the level of water quality necessary to protect existing uses fully will be achieved. The Division will document the basis for the trade through a TMDL pursuant to CWA § 303(d) requirements. Such TMDLs will include an appropriate margin of safety. Such a margin of safety will address, in particular, the uncertainties associated with any proposed nonpoint source controls, as well as variability in effluent quality for point sources. See definition of trading in Part II.

(5) Additional Information Requirements

The applicant may be required to provide monitoring data or other information about the affected waterbody to help determine whether designated uses also reflect existing waterbody uses or the level of water quality necessary to protect existing uses fully. The information that will be required in a given situation will be identified on a case-by-case basis. Because these procedures presume that designated uses reflect existing uses, such information will typically be required only where this presumption is in doubt, based on the information available to the Division. Where this presumption is in doubt, the applicant may be required to provide physical, chemical, or biological monitoring data or other information needed by the Division to identify and protect existing uses.

D. Ensure Full Protection of Existing Uses

(1) Presume that Applicable Criteria Will Protect Existing Uses

The procedure just discussed presumes that implementation of the water quality criteria established to protect ***designated*** uses will also incidentally protect ***existing*** uses. However, situations may arise where a proposed (regulated) activity will impair or eliminate an existing use for reasons which cannot be tied to any applicable water quality criterion (e.g., impacts to aquatic life habitat that may result from the discharge of "clean" sediment).

(2) Where Applicable Criteria Will Not Protect Existing Uses

Where the Division concludes that existing uses will be impaired by a regulated activity for reasons which cannot be tied to the applicable criteria, the Division will work with the project applicant to revise the project design such that existing uses will be maintained and protected. If a mutually-acceptable resolution cannot be achieved, the Division will document the basis for its preliminary determination regarding the loss or impairment of existing uses that will occur using the antidegradation review worksheet, identify appropriate control requirements. up to and including denial of the proposed activity, and public notice its preliminary decision.[1] Where possible,

[1] Note that only regulated activities are addressed by these procedures (e.g., discharge of a pollutant that may have a physical effect not addressed by water quality criteria).

such effects will be predicted based upon quantitative methods. In predicting effects. the Division will use all information submitted by the applicant, available modeling techniques, and best professional judgment based upon experience with similar types of projects, as appropriate.

(4) Where Loss or Impairment of Existing Uses is Not Predicted
Where the Division determines that implementation of the applicable water quality criteria will fully protect the existing uses, that finding will be documented using the antidegradation review worksheet.

PART VIII. DOCUMENTATION, PUBLIC REVIEW, AND INTERGOVERNMENTAL COORDINATION PROCEDURES

A. Documentation of Antidegradation Review Findings

(l) Antidegradation Worksheet
The Division will complete an antidegradation review For all proposed regulated activities that may have some effect on surface water quality. The findings of all antidegradation reviews will be documented using an antidegradation worksheet, a copy of which is attached to this guidance (see page 35).

B. Public Review Procedures

(1) Follow State Requirements
The antidegradation review findings will be subjected to the state public participation requirements found at [insert appropriate reference]. A separate public notice for purposes of antidegradation need not be issued. For example, the antidegradation preliminary findings may be included in the public notice issued for purposes of an NPDES permit/§ 401 certification.

(2) Content of Public Notice
In preparing a public notice, the Division will, at a minimum: (a) outline the substance and basis of the state's antidegradation review conclusions, including the preliminary finding regarding whether to authorize the proposed activity, (b) request public input on particular aspects of the antidegradation review that might be improved based on public input (e.g., existing uses of the waterbody by the public, the preliminary determination on socio-economic importance), (c) provide notice of the availability of the antidegradation review worksheet, (d) provide notice of the availability of any introductory public information regarding the state antidegradation program, and (e) include a reference to the state antidegradation policy.

C. Intergovernmental Coordination Procedures

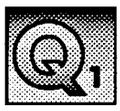
(l) Follow State CPP
The Division shall conduct all antidegradation reviews consistent with the intergovernmental coordination procedures included in the state's continuing planning process.

(2) Minimum Process
At a minimum, the Division will provide copies of the completed antidegradation review worksheet and/or the public notice to appropriate state and federal government agencies along with a written request to provide comments by the public comment deadline.

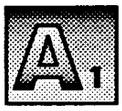
PART IX. QUESTIONS AND ANSWERS

The following questions and answers are intended to provide additional explanation regarding how the Board and the Division will implement the state antidegradation policy.

Tier 3 Questions



A proposed expansion of a municipal point source discharge is located 20 miles upstream of an ONRW segment boundary. Under what circumstances would the expanded discharge be allowed?

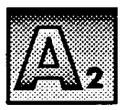


Pursuant to tier 3 requirements, a new or expanded upstream source may be allowed only where it would have no effect on the water quality of the downstream ONRW segment. The Division would predict effects on the water quality of the downstream ONRW segment for appropriate parameters using appropriate techniques. Where necessary, the applicant may be required to provide monitoring data to support model development. calibration, and/or validation. Unless the expanded portion of the discharge is expected to contain persistent toxics, it is possible that the discharge can be allowed because of dilution, fate, and transport processes that would occur within the 20 stream miles. If the proposed discharge would not affect the quality of the ONRW, the proposed activity would still be subject to tier 2 or tier 1 requirements applicable to the receiving water segment.

Tier 2.5 Questions

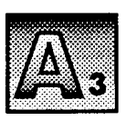
A proposed expansion of an industrial point source discharge would discharge directly into an OSRW segment. The effluent is expected to contain bioaccumulative toxics. Can the expanded discharge be allowed?

Yes, under certain circumstances. Pursuant to tier 2.5 requirements, a new or expanded source may be allowed provided that it would have *no effect* on the water quality of the OSRW (i.e., effluent quality at or better than background quality). The Division would predict effects on the water quality of the OSRW segment for appropriate parameters using appropriate techniques. Since the discharge would increase mass loadings of bioaccumulative toxics, an important consideration is the extent of any existing accumulation of such toxics in fish tissue and sediment.



Construction of a state park visitor's center has been proposed adjacent to an OSRW segment. The center would provide Park visitors with information and a parking lot. A small treatment facility is proposed to handle the wastewater effluent that would result from the visitors center. Effluent from the treatment facility would be discharged directly into the OSRW segment. Can the discharge be allowed?

The antidegradation tier 2.5 procedure includes a prohibition of any permanent new source of pollutants that would lower the quality of an OSRW segment. However, pursuant to Part V(B)(4) of the implementation procedure, the Division may allow exceptions to this prohibition where the proposed activity would serve to "maintain or enhance the value, quality, or use" of the OSRW segment. Because a visitor's center certainly would enhance public access and use, the Division would first work with the project applicant to determine if there are reasonable alternatives to establishing a new point source discharge. Depending on the specific circumstances, it is possible that such a discharge could be allowed.



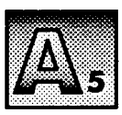
Tier 2 Questions

A new point source discharge is proposed to a segment which meets the high quality test. The NPDES permit would include only technology-based limits which, it has been determined, will be adequate to achieve all water quality criteria and protect the designated uses. Is an antidegradation review required?

Yes. Under the antidegradation procedure, an antidegradation review is required for all "regulated activities" which includes, for example, activities requiring an NPDES permit. The fact that water quality-based limits are not required is irrelevant. The antidegradation review is required to ensure that, for example, the availability of any reasonable nondegrading or less-degrading alternatives is evaluated. Whenever an NPDES permit is issued, an antidegradation review worksheet must be completed by the Division to document

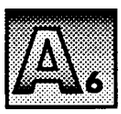
the fact that antidegradation requirements were determined to be satisfied.

A proposed discharge would significantly degrade existing water quality for dissolved oxygen and ammonia. Background concentrations of dissolved oxygen and ammonia are currently better than the applicable aquatic life criteria for these parameters. Although an aquatic life designated use has been assigned to the receiving water segment, historical mining practices have resulted in high ambient levels of copper, zinc and cadmium. These heavy metals would not be included in the proposed discharge. However, as a result of these high metals concentrations, the biological health of the receiving segment is very severely limited such that "fishable" conditions are not currently achieved. Is the segment a high quality water subject to tier 2 requirements?



No. The state will not apply tier 2 requirements to segments where water quality is not better than necessary to support fishable/swimmable uses. Even though assimilative capacity exists for the parameters in question, the historical pollution sources are currently precluding attainment of a fishable aquatic life use. Although the state presumes that most waters are high quality and subject to tier 2 protection, in this case the overall quality and value of the segment is not sufficient to warrant application of tier 2. However, a proposed municipal discharge to the same segment could be subject to tier 2 requirements (for purposes of bacteriological quality requirements) if existing water quality is better than necessary to support "swimmable" uses.

A new point source discharge is proposed on a segment for which very little ambient monitoring data is currently available. Based on limited upstream monitoring data, land use information, absence of other known point sources, and the magnitude of the proposed discharge, the Division believes that the segment meets the high quality test described in Part VI(A) of these procedures and that significant degradation of existing water quality will result. Accordingly, the Division asks the project applicant to evaluate alternatives to lowering water quality. However, the project applicant believes that the segment is not a high quality water and asks the Division the following question: "What do we have to do to show you that the segment is not a high quality water?"



Consistent with Part VI(A) of these procedures, the applicant must show either that: (1) neither of the CWA fishable/swimmable goal uses are attained, or (2) fishable/swimmable uses are attained, but there is no assimilative capacity for any of the parameters to be affected by the proposed discharge (i.e., water quality is not "better

than necessary" to support fishable/swimmable uses). One of these showings must be made with appropriate physical, chemical and/or biological data, taking into account spatial and temporal variability. The amount of sampling and locations for sampling would be determined on a case-by-case basis. Sampling should be conducted to characterize, during the appropriate critical condition(s), the existing uses and existing water quality of the segment. In general, the monitoring plan should be clearly defined by the applicant in consultation with the Division prior to any field work. The applicant would be responsible for the costs of field monitoring and laboratory analysis.

A proposed activity would increase the ambient concentrations for several metals in a high quality segment. A number of upstream point sources are discharging only a fraction of the total loadings for these same metals that their permits authorize. How would the Division go about determining whether the proposed degradation is significant enough to warrant further tier 2 review?

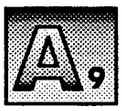
The Division's analysis might look at several considerations. In all likelihood, the Division would examine the extent to which available assimilative capacity would be reduced. Typically, assimilative capacity is defined as the difference between the water quality criteria and the existing ambient background quality for the parameters in question. In this case, however, the Division would look at assimilative capacity as the difference between the water quality criteria and the ambient quality that would exist if all point sources were discharging at their permitted loading rates. Establishing such a baseline is necessary in order to get a true picture of the remaining assimilative capacity in the segment.

Where an existing facility's effluent quality is better than the NPDES permit requires, and the permit comes up for renewal, should reissuing the same permit be considered significant degradation?

Yes, in some cases. One of the factors included in the state's implementation procedure to help determine significant degradation is: "the difference, if any, between permitted and existing effluent quality." This factor has been included to address situations where a facility's existing effluent quality is substantially better than what the permit authorizes. In such situations, and particularly where the parameters in question are of concern (such as may be the case for persistent toxic substances that have accumulated in fish or sediments), it may be necessary to subject such re-issued permits to further antidegradation reviews, including an evaluation of alternatives. The result of such review may be a re-issued permit with limits that reflect existing effluent quality. Such review may also reveal that rea-

sonable pollution-prevention alternatives are available that would result in complete elimination of the parameters of concern from the facility's effluent. Thus, there will be situations where reissuing the same permit will be considered significant degradation and subjected to further antidegradation review.

A proposed activity would result in a significant new source of pollutants to a high quality segment. The effluent quality for the proposed source would satisfy all technology and water quality (criteria)-based effluent requirements. However, the alternatives analysis demonstrates that a reasonable non-degrading alternative is available. Does antidegradation require that the non-degrading alternative be implemented?

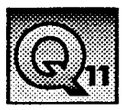


Yes. The proposed activity could only be authorized if it were modified to implement the non-degrading alternative. In this case, simply satisfying the technology and water quality-based effluent requirements is not adequate because a reasonable alternative is available that will better maintain and protect existing water quality.

Because of a lack of background water quality data, it is unclear to what extent a proposed activity on a high quality segment would change ambient concentrations of several parameters. However, the Division believes that a less-degrading alternative is clearly available. How would the Division proceed?

In this case, predicting the effect of the proposed activity on ambient water quality may not be critical from an antidegradation perspective. Because the primary Function of the tier 2 procedures is to require any reasonable non-degrading or less-degrading alternatives, and such an alternative is clearly available in this case, the Division would likely "by-pass" the significance Finding (consistent with Section VI(B)(4) of this implementation guidance) and proceed to the necessity of degradation finding. Although quantifying background concentrations of the parameters in question would be needed to derive a water quality based effluent limit (WQBEL) or Total Maximum Daily Load (TMDL), it may not be critical from an antidegradation perspective. Where additional ambient data is needed for purposes of WQBEL calculation (or perhaps to support a finding of importance), the Division would likely require the project applicant to provide the needed data. In general, the water quality data and procedures used to establish a Total Maximum Daily Load (TMDL) will be adequate to answer pertinent antidegradation questions.

Tier 1 Questions



A project has been proposed that requires a CWA § 404 dredge and fill permit. The project would result in fill material being placed in a wetland which is protected as a surface water of the state, eliminating the existing uses in the filled area. Considering the state antidegradation requirements under tier 1, can a CWA § 404 permit and a state § 401 water quality certification be issued?

EPA guidance states that, since a literal interpretation of the antidegradation policy could result in preventing the issuance of any wetland fill permit under CWA § 404, and it is logical to assume that Congress intended some such permits to be granted within the framework of the Act, existing uses will be deemed protected with regard to fills in wetlands if the discharge would not result in "significant degradation" to the aquatic ecosystem as defined under § 230.10(c) of the § 404(b)(l) guidelines.[1] The state intends to apply this EPA guidance in most cases. However, EPA guidance does not affect the state's authority, pursuant to CWA § 401 and state antidegradation requirements, to condition or deny water quality certifications where a wetland fill project would result in loss or impairment of existing uses. Although state certifications For § 404 permits have been and will continue to be issued where appropriate. the state is not bound by EPA guidance with respect to interpretation of state existing use protection requirements. Further, EPA has encouraged states to utilize the CWA § 401 certification process and state antidegradation requirements as a valuable tool for influencing CWA § 404 permit decisions.[2]

A new industrial discharge is proposed to a waterbody which only qualifies for tier 1 protection. Although the segment has not been assigned any aquatic life designated uses, a citizens group has submitted information indicating that the segment supports a community of certain nongame Fish species and a variety of pollution-sensitive macroinvertebrate species. Does antidegradation require that the proposed discharge maintain water quality necessary to support the existing aquatic life use, even though no aquatic life use is designated?

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[1] **See *Questions and Answers on: Antidegradation.*** U.S. Environmental Protection Agency, August, 1986.

[2] **See *Wetlands and 401 Certification, Opportunities and Guidelines for States and Eligible Indian Tribes.*** U.S. Environmental Protection Agency, April, 1989.

Yes. The Division would examine the information submitted by the citizens group, any other available information such as data that the applicant has been required to submit, and make a determination regarding the existing aquatic life use and the level of water quality necessary to support that aquatic life use. If an existing aquatic life use is identified, and prior to authorizing the new discharge, the Division is required under antidegradation requirements to ensure that the point source control requirements will fully protect the identified aquatic life use, regardless of whether that use has been designated. A change in the state water quality standards, to upgrade the designated use, is not required to protect the existing use. However, at the earliest opportunity the state would initiate a rulemaking to appropriately revise the designated uses for the segment.

ANTIDEGRADATION REVIEW WORKSHEET

1. Name of Reviewer: _____
   Name of Receiving Water: _____
   Basin: _____
   Segment No.: _____
   Stream Classification: _____
   Other: _____

2. Brief description of Proposed Activity:

   ID Number, if any: _____

3. Which tier(s) of antidegradation apply?

   ☐ Tier 3 - go to question 4

   ☐ Tier 2.5 - go to question 7

   ☐ Tier 2 - go to question 10

   ☐ Tier 1 - go to question 16

Tier 3 Questions

4. Will the proposed activity result in a permanent new or expanded source of pollutants directly to an ONRW segment?

   ☐ yes - recommend denial of proposed activity.

   ☐ no

5. If the proposed activity will result in a permanent new or expanded source of pollutants to a segment upstream from an ONRW segment, will the proposed activity affect ONRW water quality (see IV(C)(l) of the implementation procedure)?

   ☐ yes - recommend denial of proposed activity

   ☐ no

   Basis for conclusion:

6. If the proposed activity will result in a non-permanent new or expanded source of pollutants to an ONRW segment or a segment upstream from an ONRW segment, will the proposed activity result in "temporary and limited" effects on ONRW water quality (see IV(D)(l) of the implementation procedure)?

   ☐ Yes

   ☐ no - recommend denial of proposed activity

   Basis for conclusion:

Tier 2.5 Questions

7. If the proposed activity will result in a permanent new or expanded source of pollutants directly to an OSRW segment or a segment upstream from an OSRW segment, will the proposed activity affect OSRW water quality (see V(B)(l) of the implementation procedure)?

   ☐ yes - recommend denial of proposed activity.

   ☐ no

   Basis for conclusion:

8. Should the new or expanded permanent source of pollutants that will affect water quality be authorized because, overall, it will serve to maintain or enhance the value, quality, or use of the OSRW (see V(B)(4) of the implementation procedure)?

☐ yes

☐ no - recommend denial of proposed activity

Basis for conclusion:

9. If the proposed activity will result in a non-permanent new or expanded source of loadings to an OSRW segment or a segment upstream from an OSRW segment, will the proposed activity result in "temporary and limited" effects on OSRW water quality (see V(C)(l) of the implementation procedure)?

☐ yes

☐ no - recommend denial of proposed activity

Basis for conclusion:

Tier 2 Questions

10. Does the waterbody qualify for tier 2 protection as a result of a High Quality use designation by the Board (see VI(A) of the implementation procedure)?

☐ yes

☐ no

If no, basis for conclusion that tier 2 applies:

11. Will the proposed activity result in significant degradation (see VI(B) of the implementation procedure)?

- ☐ yes
- ☐ no - recommend approval of the proposed activity
- ☐ significance test by-passed due to availability of a reasonable less degrading alternative

If significance test not by-passed, basis for conclusion:

12. Has the applicant completed an adequate evaluation of alternatives and demonstrated that there are not reasonable alternatives to allowing the degradation (see VI(C) of the implementation procedure)?

- ☐ yes
- ☐ no - recommend denial of the proposed activity

If no, basis for conclusion:

13. Has the applicant demonstrated that the proposed activity will provide important socio-economic development in the area in which the affected waters are located (see VI(D) of the implementation procedure)?

- ☐ yes
- ☐ no - recommend denial of the proposed activity

If no, basis for conclusion:

14. Will existing uses be fully protected consistent with the Tier 1 procedures outlined by questions 17-l 9 below (questions 17-l9 must be completed)?

- ☐ yes
- ☐ no - recommend denial of the proposed activity

15. Have all state-required controls on point and nonpoint sources to the segment been achieved (see VI(F) of the implementation procedure)?

☐ yes

☐ no - recommend denial of the proposed activity

Basis for conclusion:

Tier 1 Questions

16. The basis for concluding that tier 2 requirements do not apply is as follows (see VII(A)(l) of the implementation procedure):

17. Are there uses that exist or have existed since November 28, 1975 that have more stringent water quality protection requirements than the currently designated uses (see VII(C) of the implementation procedure)?

☐ yes

☐ no

If yes, basis for conclusion:

18. If the answer to question 17 was yes, what water quality criteria requirements will ensure protection of such existing uses (see VII(C) of the implementation procedure)?
(Indicate parameters and applicable water quality criteria.)

19. Will existing uses be fully maintained and protected (see VII(D) of the implementation procedure)?

☐ yes

☐ no - recommend denial of the proposed activity

If no, basis for conclusion:

Preliminary Decision

20. Based on the above, can the proposed activity be authorized pursuant to the state antidegradation policy?

☐ yes

☐ no

Basis for conclusion:

Signature: _____

Date: _____

Water Quality Antidegradation Implementation Conference

Alaska Department of Environmental Conservation
(ADEC) Division of Water & Tetra Tech, Inc.
Anchorage Alaska, December 2-3, 2009

Summary of Workshop Proceedings

Submitted to:

Jim Powell and Carl Reese
Alaska Department of Environmental Conservation
Water Quality Standards
Division of Water
Juneau, Alaska 99801

Submitted by:
Tetra Tech, Inc.
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December 17, 2009

Executive Summary

On December 2-3, 2009, ADEC hosted a conference in Anchorage, Alaska, intended to inform policy makers, wastewater discharge permittees, permit writers, and interested public regarding options for antidegradation policy implementation procedures. Antidegradation Policy is part of the Alaska Water Quality Standards in 18 AAC 70, which protects Alaska's waters from pollution. This conference was for informational purposes only and no regulations were proposed at the workshop. The following specific objectives were identified for the workshop:

1. Share information about US EPA antidegradation policy, the pros and cons of various state antidegradation implementation approaches, lessons learned, and legal challenges and precedents; and
2. Provide a forum for stakeholders to discuss the implementation programs adopted by other states and approaches that might work best in Alaska.

The centerpiece of the workshop was presentations made by four invited speakers representing Minnesota, Kentucky, Oklahoma, and South Carolina, all of whom have dealt with antidegradation policies and implementation methods. In addition, presentations were made on behalf of five stakeholder interests: mining, timber, stormwater, oil and gas, and environmental organizations. The workshop included a breakout session in which participants, along with the invited speakers, discussed several important issues related to antidegradation implementation, specifically in Alaska.

Some key points identified during the workshop included:

- Antidegradation policy is designed to do three things: (1) protect existing uses (i.e. Tier 1 protection); (2) protect water quality that exceeds what is necessary to support aquatic life and other uses (i.e., Tier 2 "high quality" waters), and (3) provide a mechanism to protect waters of exceptional significance (i.e. Tier 3 "Outstanding National Resource Waters").
- States use one of two basic approaches to assign tiers to waterbodies with respect to antidegradation implementation: "parameter-by-parameter", which identifies quality tiers for each pollutant of concern; and, "waterbody by waterbody", which specifies which waterbodies will receive what type of protection under their assigned tier. Each approach has advantages and disadvantages.
- Some states have adopted a *de minimus* level of degradation in implementing antidegradation policy (which determines whether an antidegradation review is needed or not). Setting a *de minimus* degradation level requires assessment of baseline data and complex procedures to implement. Some states have found it more productive to evaluate alternatives levels of antidegradation review rather than deal with whether each discharge is or is not *de minimus.* Categorical definitions of *de minimus* have been successfully challenged in federal court (e.g. *Kentucky Waterways Alliance et al. v. Johnson,* 6th Circuit).
- Some participants suggested that Antidegradation implementation procedures address antidegradation requirements when a general permit is developed and when it is implemented (i.e., applied to a specific activity).
- Because Alaska has so many waterbodies and a relative scarcity of existing water quality data, monitoring and establishing baseline for antidegradation analyses will require a creative, integrated approach.
- The antidegradation review process should be open and transparent, with early involvement of stakeholders as well as a public participation opportunity at the end of the review, before

decisions are made. Information from local stakeholders is recognized as important to the process.

- Discussion at the conference indicated an interest in flexible approaches that would allow consideration of multiple, landscape-level activities that affect water quality in any future antidegradation program.
- Industry stakeholders need transparent, comprehensive implementation guidance so that there will be no surprises down the road and so that permittees can plan ahead with an understanding of the antidegradation process.

1.0 Introduction

Section 303 (Title 33 of United States Code [U.S.C.] 1313) of the Clean Water Act (CWA) requires states and authorized tribes to adopt water quality standards for waters of the United States within their applicable jurisdictions. Such water quality standards must include, at a minimum (1) designated uses for all waterbodies within their jurisdictions, (2) water quality criteria necessary to protect the most sensitive of the uses, and (3) antidegradation provisions consistent with the regulations at Title 40 of the *Code of Federal Regulations (*CFR) 131.12. Antidegradation is an important tool for states and authorized tribes to use in meeting the CWA's requirement that water quality standards protect the public health or welfare, enhance the quality of water, and meet the objective of the Act to "restore and maintain the chemical, physical and biological integrity" of the nation's waters. EPA's regulation at 40 CFR 131.12 requires that states and authorized tribes adopt antidegradation policies and identify implementation methods to provide three levels of water quality protection: (1) maintenance and protection of existing water uses and the level of water quality (WQ) to protect those uses; (2) protection of high quality waters; (3) protection of outstanding natural resource waters (ONRWs).

While implementation guidance and other information has been available for some time regarding designating uses, identifying existing and beneficial uses, and implementing water quality criteria in both NPDES and ambient programs (i.e., 303[b], 303[d], TMDLs), Alaska, like many States and Tribes, has not yet developed procedures for implementing the antidegradation policy of the water quality standards program. In an effort to begin learning about antidegradation policies, ADEC contracted Tetra Tech, Inc. to research and produce a summary report evaluating antidegradation implementation policies of several states across the U.S. spanning a range of alternative procedures. This research and evaluation were summarized in a report entitled: "Evaluation of Options for Antidegradation Implementation Guidance" (Tetra Tech, Inc., October 6, 2008).

To continue the educational process regarding antidegradation policies, ADEC hosted a 1.5 day conference in Anchorage, AK, which was intended to inform policy makers, wastewater discharge permittees, permit writers, and interested public regarding options for implementation procedures or methods. Antidegradation Policy is part of the Alaska Water Quality Standards in 18 AAC 70 which protects Alaska's waters from pollution. This conference was designed for informational purposes only and no regulations were proposed at the workshop. The following specific objectives were identified for the workshop:

1. Share information about US EPA antidegradation policy, the pros and cons of various state antidegradation implementation approaches, lessons learned, and legal challenges and precedents.
2. Provide a forum for stakeholders to discuss the implementation programs adopted by other states and approaches that might work best in Alaska.

1.1 Workshop Format

The workshop was organized in four parts (see Appendix A for the agenda): (1) introductory material provided by ADEC, EPA, and Tetra Tech, Inc.; (2) presentations made by four invited

speakers representing different states: Minnesota, Kentucky, Oklahoma, and South Carolina; (3) presentations made on behalf of five stakeholder interests: mining, timber, stormwater, oil and gas, and environmental organizations; (4) panel discussion with the state and stakeholder representatives; and (5) breakout session addressing three questions related to antidegradation: (a) what tools or resources are available to determine existing (baseline) water quality, and what additional tools or resources might be needed? (b) Should Alaska allow a certain level of "de minimis pollution" (i.e., use of available assimilative capacity) before requiring a full antidegradation review? (c) How should Alaska specify what alternatives or options should be considered in determining whether or not activities that would degrade water quality are "necessary," how should the state assess economic or social benefits in an antidegradation review, what sort of analysis and documentation should be required, and who should conduct or produce it?

The following report summarizes issues, questions, and discussion resulting from the workshop, organized by the five agenda areas above.

2.0 Introductory Presentations

2.1 Jim Powell (ADEC, Standards)

Jim Powell gave an overview of ADEC's water quality standards, the website where standards issues reside and the special web page for the antidegradation workshop. He summarized the state antidegradation policy (which mirrors the federal policy) noting antidegradation is one of the 3 legs of the water quality standards program. He summarized the state policy regarding the three tiers of waters: Tier 1 or waters with the minimum water quality allowed (consistent with the "fishable swimmable" goals of the Clean Water Act); Tier 2, high quality waters; and Tier 3 or outstanding national resource waters (ONRWs). Mr. Powell indicated that ADEC has not identified Tier 3 waters as of yet. He summarized the five elements of antidegradation analysis including evaluation of economic and social development, water quality criteria, protecting existing uses, pollution prevention and BMPs, and wastewater treatment.

2.2 Bill Beckwith (EPA Region 10)

Mr. Beckwith summarized the federal antidegradation policy including some of the history of the current policy. He reiterated that antidegradation policy is designed to do three things: (1) protect existing uses; (2) protect water quality that exceeds that necessary to support aquatic life and other uses (i.e., Tier 2 waters), and (3) provide a mechanism to protect waters of exceptional significance (ONRWs or Tier 3 waters). Mr. Beckwith explained that all states are to identify implementation methods for their antidegradation policy and he described some of the elements that should be included in the methods. He explained the components of alternatives analysis and the importance of considering non-degrading alternatives as part of an antidegradation review. His presentation stressed the importance of dealing with and protecting high quality or Tier 2 waters as those waters are the ones most likely to be affected by potentially degrading activities or proposals. He noted that a state does not have to adopt ONRWs necessarily,

according to EPA's policy, but they must have a mechanism in place whereby ONRWs could be adopted.

2.3 Jerry Diamond and Barry Tonning (Tetra Tech, Inc.)

Mr. Tonning gave an overview of salient issues and challenges faced by states in developing implementation methods for their antidegradation policies. He also briefly summarized several recent litigation activities in relation to state antidegradation implementation methods. Mr. Diamond summarized the highlights of Tetra Tech's report for ADEC regarding different state approaches to antidegradation. He noted that the report considered only a few states and should not be considered exhaustive; however, the states evaluated represented a broad range of implementation methods and different issues regarding topics such as developing baseline, identifying and protecting Tier 2 waters, de minimus, and criteria for identifying ONRWs.

2.4 Cameron Leonard (ADEC)

Mr. Leonard noted that Alaska has an antidegradation policy but hasn't identified methods for implementing the policy as of yet. He also noted that while federal regulation requires states to have an antidegradation policy they do not have good guidance for states on how to implement antidegradation policy. He reported that some stakeholders have argued that ADEC cannot make antidegradation determinations until it issues its implementation guidance. He gave some examples of cases in Alaska as well as from some other states in this regard. Mr. Leonard recognized that ADEC needs to develop its implementation guidance so as to hopefully avoid legal entanglements.

3.0 Invited State Presentations

The invited speakers discussed how states have been implementing their antidegradation policies. Two states – Minnesota and South Carolina – used the "parameter-by-parameter" approach, which entails calculating the degree of degradation by assessing the use of available assimilative capacity caused by new or expanded discharges to the receiving waterbody. Oklahoma and Kentucky use the "waterbody by waterbody" or designation approach, which specifies which waterbodies will receive what type of protection under the various tiers. It appeared that the waterbody-by-waterbody approach closely resembled the parameter-by-parameter approach in practice, after the protection tier designations were made, because the states still assessed degradation by reviewing increased pollutant loads on a parameter basis. The subsections below provide details on each state approach:

Oklahoma

Oklahoma uses the waterbody-by-waterbody approach, and lists which waters are considered "high quality," i.e., those to be protected from new sources of degradation unless an alternatives analysis and socioeconomic justification is developed. The state reportedly has sufficient water quality data to determine baseline water quality for conducting antidegradation reviews – it does not accept data collected by volunteers but will consider those collected by public agencies. There is no allowance for de minimus levels of pollution from regulated activities discharging into Tier 2 waters.

South Carolina

South Carolina adopted the parameter-by-parameter approach, and considers baseline water quality for Tier 3 ONRWs and Tier 2.5 Outstanding Resource Waters (state ORWs) to be existing water quality as characterized at the time of waterbody classification. The state lists specific discharge types that are banned for ONRWs and ORWs, but allows those discharges upstream of protected waters if modeling indicates there will be no measurable impact within the ONRW and ORW segments downstream. South Carolina has strict policies regarding water quality data collection, monitoring, and assessment, and conducts probabilistic sampling to determine overall trends. The state lists specific options – including land application of the effluent – to be considered for alternatives analyses, which must be considered and documented by dischargers. CWA Section 208 area waste planning is still conducted in the state. Specific economic and social factors to be considered when proposing to degrade Tier 2 waters are listed.

Minnesota

Minnesota, a state that was sued for failing to apply antidegradation requirements to MS4 stormwater permits, uses the parameter-by-parameter approach. The state is currently revising and strengthening its stormwater rules to reflect current EPA recommendations and recent lawsuit rulings. The state assumes a waterbody is Tier 2 water by default, including impaired waters. Minnesota is including increased flow as a potentially degrading parameter under the new rules, since it can affect aquatic habitat. Baseline water quality information is collected by multiple entities, including state entities and dischargers, in some cases. Minnesota specifies use of the USACE CWA Section 404 permit "avoidance/minimization/mitigation" hierarchy in conducting antidegradation review alternatives analyses. Reviews are applied to general permits when they are developed and when they are applied to specific activities subject to permit coverage. Minnesota will adjust baseline water quality upward if there are improvements in water quality.

Kentucky

Information on Kentucky's program was provided by the attorney that successfully sued the state for failing to implement its antidegradation policies in accordance with EPA provisions. Kentucky also places most waters in the Tier 2 category, but does so under a waterbody-by-waterbody framework. The state does not include impaired waters in Tier 2 unless they're impaired for mercury – this ensures that state lakes are protected. Kentucky has undertaken efforts to develop antidegradation requirements for general permits, including stormwater and other general permits. Discussions are ongoing regarding the use of a de minimus standard for minor discharges and how to deal with the incremental loss of assimilative capacity due to multiple activities that cumulatively consume available assimilative capacity for pollutants of concern. Another issue is the protection of waterbody uses vs. the protection of numeric criteria only – i.e., there might be cases where uses are degraded significantly, but measurable changes in water quality criteria parameters might be minimal. In other cases, criteria limits might not adequately protect uses – this is more a uses/criteria issue than an antidegradation issue, but it does affect the antidegradation implementation approach.

3.1 Discussion

Several issues were raised during this discussion period.

A. How does the regulatory agency make a decision regarding antidegradation?

Participants raised several issues related to allowing a de minimus level of degradation. One issue concerns the need to consider quantitation limits for pollutant measures. There was some discussion as to whether the de minimus threshold should not be less than what can be quantified accurately. A second issue raised is how should ADEC handle cumulative impacts using a de minimus approach? Over time, there can be difficulties keeping track of the incremental loss of assimilative capacity – and water body use support – as new discharges are added or expanded. Given the above concerns, some participants noted that it may not be worth the trouble of having a de minimus in implementing antidegradation policy, due to all the analysis related to decisions regarding whether or not a new or expanded activity would meet an adopted de minimus standard. Minnesota found that it's more productive evaluating alternatives than to deal with de minimus and whether an antidegradation review should take place or not.

B. Seasonal issues in Alaska

Alaska has strong seasonal components in terms of certain pollutants (e.g., TSS) due to ice break up in spring. Natural conditions can be an issue in terms of dealing with baseline water quality conditions and antidegradation policies.

C. Limited data in Alaska

It was noted that water quality data not only for determining baseline and antidegradation but also when writing NPDES permits. For example, the state has more than three million lakes and thousands of miles of streams. It is physically impossible to collect sufficient data to characterize even a small portion of these waters, most of which (i.e., > 99%) are pristine.

One recommendation was for ADEC to initiate a probability-based monitoring program to get baseline data, focusing efforts around areas where a difference can be made (e.g., cities, permitted activities). While these data would not be particularly useful in conducting antidegradation reviews for specific water body segments, they could be used to track trends on a broad basis. It was also noted that data from volunteer/citizen monitoring programs could be used if QA/QC is acceptable. Alaska has some active citizen monitoring groups which could be used for this purpose. Oklahoma noted that they don't use volunteer monitoring data sources for regulatory decision-making but encourages those programs for educational and general screening purposes, and to help promote good relationships with citizens. A suggestion was made that the applicant should bear the burden of obtaining baseline water quality data if none exist. This is being done in some cases already in Alaska. The question was asked: How much data do you need to characterize baseline? Oklahoma suggested 5 years and 100 data points as a minimum. South Carolina indicated that you don't need water quality baseline data for certain alternatives; e.g., land application of effluent. Many noted that the quality of the data is as important as quantity. Some states require collection of 12 months of data to characterize baseline water quality. Other programs that collect water quality data may be able to assist ADEC involving

antidegradation baseline and other analyses. For example, Oklahoma coordinates with several agencies regarding water quality standards issues and may use data collected by other state or federal agencies.

D. Short-term discharges and antidegradation

Short-term discharges may present an issue in terms of antidegradation implementation, particularly with general permits (stormwater, construction, etc). It was noted that BMPs in general permits may not support antidegradation requirements. Adaptive management approaches may be useful to tighten up BMP requirements in general permits so as to comply with antidegradation. It was suggested that antidegradation requirements may need to be addressed when the general permit is developed and when it is implemented (i.e., applied to a specific activity).

E. Social and Economic Benefit in antidegradation reviews

It was noted that the public process is a key aspect that serves as a check on the socioeconomic analysis and decision-making procedure in antidegradation reviews. Transparency and inclusiveness are generally viewed as effective methods for ensuring that any concerns are aired and addressed prior to approving activities that would degrade water quality.

If a proposed activity can find a way to avoid having a discharge in the first place, then it can avoid the antidegradation review process entirely, including the socioeconomic piece. Therefore, there needs to be a comprehensive alternatives analysis as part of the review process. For example, there may be non-discharge-related alternatives that are satisfactory. It was noted that rarely is the expanded discharge itself the activity; the discharge is a consequence of some other desired or needed activity. An expanded or new wastewater discharge might be one of many alternatives, some of which don't require a discharge (e.g., process changes that use less water, use of soil infiltration of wastewater effluent, etc.).

South Carolina found that Clean Water Act Section 208 area waste plans are useful for evaluating social and economic benefits because this process works at the local level and consolidates resources locally to deal with the proposed activity. 208 plans serve as a screening process before an antidegradation review ever comes to DHEC.

F. Mixing zones and antidegradation

It was noted that mixing zone requirements must be met and that mixing zones are not specifically a part of antidegradation but can be included in antidegradation implementation methods. If a state does not have de minimus policy, they may elect to have no mixing zone or degradation allowed. If a state does not have a de minimus policy, they may need to see how the mixing zone affects assimilative capacity inside and outside of the mixing zone.

G. Antidegradation and site-specific criteria

Site-specific criteria need to overcome many technical hurdles and requirements independent of antidegradation. It was noted that site-specific criteria are somewhat independent of antidegradation.

H. Industry versus municipal activities and antidegradation reviews

It was noted that there is the perception that expansion or new discharges associated with industry receive relatively minor antidegradation review as compared to other types of activities because the industrial activities are viewed as having sufficient sociological and economic beneficial to warrant some degradation of Tier 2 waters. However, there is still value in conducting the alternatives analysis because it may reveal non-discharge or other options that reduce or prevent degradation of the receiving waters.

4.0 Stakeholder Presentations and Panel Discussion

Stakeholders presenting during the conference provided information on their regulated activities, and noted the importance of clear rules that make sense and are applied equitably. Industries conducting regulated activities stated that they are already looking for ways to minimize the cost and environmental impacts of their operations, and are constantly seeking new technologies and methods for achieving better results in an efficient manner. There is a general sense that any new rules should be thoroughly discussed prior to adoption, to ensure that they don't just become an expensive "paper exercise." In addition, there was some interest in flexible approaches that would allow consideration of multiple, landscape-level activities that affect water quality in any future antidegradation program. For example, if an operation could show that foregoing an expensive treatment process (which would produce limited water quality improvements) in favor of other options (which would produce superior environmental results at a lesser cost) is feasible, it should be considered as part of the overall antidegradation review. This concept is somewhat similar to current discussions regarding water pollutant trading programs, whereby a discharger might be allowed to maintain higher pollutant concentrations in its effluent if it can effectively reduce pollutant loads elsewhere in the watershed.

During the subsequent discussion, it was noted that industry needs to have transparent, comprehensive implementation guidance so that there are no surprises down the road and so that permittees can plan ahead with an understanding of the antidegradation process.

5.0 Breakout Session

The following is a summary of the three breakout group discussions.

Breakout Group 1): What tools or resources do we have in Alaska to determine existing water quality, and what additional tools or resources might be needed? How much of the work should be done by public agencies, and how much should be done by the permittee?

Quite a few agencies & groups are collecting water quality data, but it's not centrally collected or easily available. Participants thought that there may be a need to look at a more efficient process, such as the anadromous fish database. The AQUA program, a coordinated effort among state programs, is also an example, as is the large mines data program (DEC, Fish & Game, etc. participate). ADEC's 303d list data is also a possibility. All felt that QA/QC of data is needed –

major facilities are required to do this now, but ADEC needs to ensure consistency. Who would fund the database and who would manage the data? Participants noted that the Anadromous Fish Catalogue is a good model. Collection could be done by permittees, as is the case now. They already have QA/QC plans – data comes in as PDF reports, but ADEC doesn't have a way to manipulate and/or use it (e.g., vie Excel files, central database, etc.).

Various sources of data exist, but they are not easily integrated, manipulated, or used. Different agencies would need to discuss coordination in data collection and reporting. Alaska has lots of streams, with little development on most, so there is little impetus to collect data. Data collection is pretty much driven by proposed activities, such as mines, timber harvest, etc. A review tool for calculating natural conditions exists, but the approach requires at least 20 data points over 2 years to develop natural condition criteria.

In report out discussion, Nancy Sonafrank (ADEC) noted that there are some new developments regarding data management. ADEC has spent 10 years trying to use STORET, but it's still very cumbersome. ADEC has developed a database, using a Region 8 format, and is now trying to populate it with current and future data collected by DEC funded projects. DEC will also consider data from NOAA, USGS, grantee data, targeted monitoring, probabilistic monitoring, and other available data when making decisions. Baseline assessments for antidegradation will eventually feed into this system. ADEC is working on it, but far behind everyone else.

Breakout Group 2): Most states allow a certain level of "de minimis pollution" (i.e., use of available assimilative capacity) before requiring a full antidegradation review, complete with justification of economic and/or social benefits for activities that would degrade water quality. Should Alaska take a similar approach? What should the de minimis level be? What about multiple "de minimis" activities that cumulatively, over time, degrade water quality beyond the de minimis levels? How should they be handled?

The group discussed pros and cons of de minimis in antidegradation policy. The point was made that it takes resources to do antidegradation reviews, so it is important to focus on the important decisions. ADEC doesn't want to be doing analyses that don't mean a lot. Also, the group recognized that it takes resources to develop a baseline and even calculate a de minimis, whatever it is. Data is thin at this point for most places in Alaska. You also need a cumulative value if you have de minimis, due to multiple dischargers over time.

Region 8 has a requirement for alternatives analysis for some de minimis categories. Having a baseline doesn't get you "out" of anything – you still have to do a review. The group asked whether de minimis is worth fighting over, or should ADEC focus instead on the review, commensurate with the size/impact of the proposed activity? That would help to scale reviews in proportion to the proposed activity. The whole scope of the review could be similarly scaled, in proportion.

De minimis for general permits (GPs) may have value, by writing them such that the BMPs and conditions get to the de minimis level so you don't have to do an antidegradation analysis; e.g., using a BMP plan specified by activity, focused on like discharges to like environments. GPs

also require some site-specific conditions (placer mining, etc.), but the conditions can still be established to capture them and manage them via a de minimis approach. Outliers would seek individual permits. Antidegradation actions would be done during permit development and permit application to a specific activity.

Breakout Group 3) (Note: this group addressed two related questions):

There is a lot of analytical work needed in assessing baseline water quality, determining potential water quality impacts from various regulated activities, reviewing alternative approaches, assessing economic and social benefits, and so on. Is there a way to organize these tasks among the various public and private sector parties involved, to build efficiency, expertise, and competency?

Some projects or activities will likely cause water quality to degrade, even down to baseline water quality criteria limits. This is allowed under existing law, as long as there are important economic or social benefits resulting from this activity. How should we assess what sort of economic or social benefits are "important?" What sort of analysis and documentation should be required, and who should conduct or produce it? How should the public participation and intergovernmental review be handled?

The group felt that permittees should bear the burden of collecting data for antideg reviews. They should also develop the economic & social justification (SEJ) information. The group noted that there is no "cookbook" answer – no checklist; reviews are not that easy. The process should be open and transparent, with early involvement and public participation and opportunity also at the end, when decisions are made. Example: initially, applicant provides justification for discharge thru public notice via agency notification. Then the ADEC review proceeds. Additional public involvement would be based on the level of public interest and comments – lots of interest, lots of public involvement. Other entities could become involved, for example, a conceptual "water board" or other group that could consider the social/economic information - local communities and groups, recognizing that the makeup of this group would be important for including stakeholders in the decisions. This approach would need representativeness to ensure credibility and a sense of true input and involvement.

A water board already exists in DNR's statutes – not used since the 1980s or so. But there may be some concern about DNR sponsoring the water board. The previous (and now defunct) water board would need to be reorganized – a new board, representative of the citizens of the state, would be preferred.

Would such a board be adding another layer? Participants recognized that they need an entity that people trust . . . wouldn't ADEC serve this purpose? Yes, but would ADEC be okay with applying the SEJ principles and determining "important economic and social benefits?"

Right now, even though there are opportunities for public comment, participants asked how is that public comment received and applied. It sometimes feels like those comments are collected as matters of course and decisions aren't necessarily affected by the comments. Because these

decisions have such a large local impact, there needs to be true local input in the decision making process. If the antidegradation review is going to reflect the views of the communities, communities need to be strongly involved. Social impacts often aren't considered equally with economic impacts. A new board could handle these types of issues and provide a venue for local input. The group didn't discuss whether the board would be statewide, or whether there would be several local boards. If it was a statewide board, there could be provisions for adding local community members when decisions affected their area.

South Carolina currently has such a model (208 watershed planning process) – Michael Montebello (SC) noted that it does represent another layer in the process, but it is an important layer. Different boards are involved when issues affect their issues/area. This helps to bring the local input into the process. The public often believes these local boards more than the state agencies.

Bill Beckwith (EPA) noted that this is a lot like the intergovernmental review process that's required under antidegradation policy now. Information from local levels is recognized as important to the process.

6.0 Wrap-up

Several questions were discussed at this point in the workshop, which, in part, serves as a useful synopsis regarding antidegradation policy and where it applies.

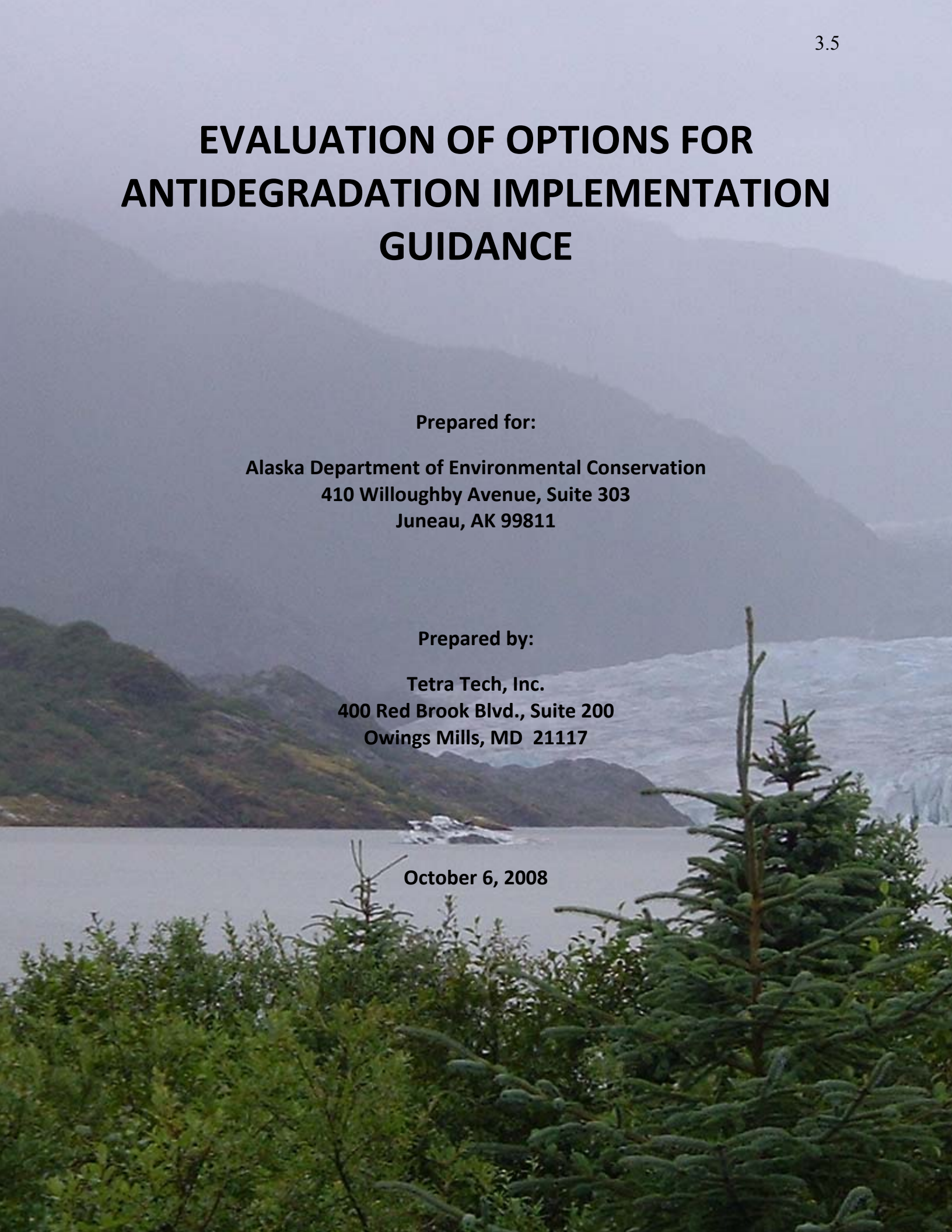
Does antidegradation apply only to point sources?
It is clear that antidegradation applies to regulated activities requiring permits under the Clean Water Act, such as NPDES and Section 404 dredge and fill permits. There needs to be a discharge or other permit in order for antidegradation policies to apply. Permits are generally applicable to point source discharges (effluents, stormwater, CSOs, etc) and areas where dredged or fill material has been placed into the waters of the U.S. Some states have elected to expand the universe of state-regulated subject to antidegradation rules. For example, state issued timber harvest permits could be subject to such rules. In addition, ADEC's policy includes nonpoint sources as well so there may be situations where antidegradation could apply and regulate nonpoint sources as well. For example, prior to authorizing a discharge that would lower water quality in high quality water, Alaska antidegradation rules specify that "for nonpoint sources, all cost-effective and reasonable best management practices" be achieved.

Does antidegradation apply to groundwater?
Alaska protects groundwater for all uses and therefore, groundwater discharges are susceptible to antidegradation policies as well.

What about tribal lands? How do ADEC's antidegradation policies affect tribal people?
In Alaska, there is very little actual tribal land (e.g., reservations) but rather tribal corporations. Since most tribal people in Alaska do not have tribal lands set aside, they fall under ADEC's antidegradation policies as well.

What characteristics would qualify as ONRW in Alaska?
This has yet to be determined. Clearly, Alaska has many pristine waters as well as national parks and other significant natural resources. A challenge will be to define what constitutes ONRWs in Alaska. Mr. Beckwith of EPA noted that while his agency does not require that states name ONRWs, it does require that the state establish a process for doing so.

EVALUATION OF OPTIONS FOR ANTIDEGRADATION IMPLEMENTATION GUIDANCE



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1.0 Introduction

Federal regulations require states to adopt antidegradation policies and implementation methods to protect water quality, allowing it to be degraded only under certain circumstances. Alaska Department of Environmental conservation (ADEC) adopted its current antidegradation policy in 1996, and it was approved by EPA in 1997. However, the State has not adopted implementation methods as required under 40 CFR 131.12. Some waterbodies in Alaska have natural water quality that exceeds the minimum criteria set by the Water Quality Standards (WQS) found in 18 AAC 70 for protection of designated uses. While these waters can be addressed through ADEC's natural condition-based water quality standards approach, in such cases, discharges that may degrade water quality must meet certain conditions and must not cause violations of WQS.

Because of Alaska's size, sparse population, and its remote character, the vast majority of Alaska's water resources are in pristine condition. More than 99.9% of Alaska's waters are considered unimpaired. With more than 3 million lakes, 714,004 miles of streams and rivers, 36,000 miles of coastline, and approximately 176,863,000 acres of freshwater and tidal wetlands, less than 0.1% of Alaska's vast water resources have been identified as impaired. Historically, Alaska's water quality assessments focused on areas with known or suspected water quality impairments.

Federal law states that antidegradation implementation methods must (1) protect existing instream uses and the water quality necessary to protect those uses; (2) protect water quality that exceeds minimum criteria limits unless there are important economic or social benefits associated with any lowering of water quality, which implies both an alternatives analysis and a socioeconomic benefits analysis; and (3) protect the quality of Outstanding National Resource Waters (ONRWs).

Tetra Tech was tasked to provide information that could be used by ADEC to develop an antidegradation implementation plan to guide Alaska's water quality standards antidegradation policy. This required a review of several other States implementation documents, found in Appendix A, which will act as a guide for developing several options for Alaska's implementation methods. This report presents Alaska's antidegradation policy, how other States implement their policies and how it relates to Alaska's policy, and several options for an implementation guidance.

2.0 Alaska's Antidegradation Policy

Alaska's antidegradation policy can be found in Department of Environmental Conservation document 18 AAC 70, *Water Quality Standards,* under section 18 AAC 70.015, amended as of December 26, 2006. The policy states that

(a) It is the state's antidegradation policy that

(1) existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected;

(2) if the quality of a water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality must be maintained and protected unless the department, in its discretion, upon application, and after compliance with (b) of this section, allows the reduction of water quality for a short-term variance under 18 AAC 70.200, a zone of deposit under 18 AAC 70.210, a mixing zone under 18 AAC 70.240, or another purpose as authorized in a department permit, certification, or approval; the department will authorize a reduction in water quality only after the applicant submits evidence in support of the application and the department finds that

(A) allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located;

(B) except as allowed under this subsection, reducing water quality will not violate the applicable criteria of 18 AAC 70.020 or 18 AAC 70.235 or the whole effluent toxicity limit in 18 AAC 70.030;

(C) the resulting water quality will be adequate to fully protect existing uses of the water;

(D) the methods of pollution prevention, control, and treatment found by the department to be the most effective and reasonable will be applied to all wastes and other substances to be discharged; and

(E) all wastes and other substances discharged will be treated and controlled to achieve

(i) for new and existing point sources, the highest statutory and regulatory requirements; and

(ii) for nonpoint sources, all cost-effective and reasonable best management practices;

(3) if a high quality water constitutes an outstanding national resource, such as a water of a national or state park or wildlife refuge or a water of exceptional recreational or ecological significance, the quality of that water must be maintained and protected; and

(4) if potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy described in this section is subject to 33 U.S.C. 1326 (commonly known as sec. 316 of the Clean Water Act).

(b) An applicant for a permit, certification, or approval who seeks to reduce water quality as described in (a) of this section shall provide to the department all information reasonably necessary for a decision on the application, including the information and demonstrations required in (a) of this section and other information that the department finds necessary to meet the requirements of this section.

(c) An application received under (a) of this section is subject to the public participation and intergovernmental review procedures applicable to the permit, certification, or approval sought,

including procedures for applications subject to the Alaska Coastal Management Program in AS 46.40 and 6 AAC 50, and applications subject to 18 AAC 15. If the department certifies a federal permit, the public participation and intergovernmental review procedures followed by the federal agency issuing that permit will meet the requirements of this subsection.

3.0 Review of Select State Antidegradation Implementation Guidance and Identification of Options

The following section briefly summarizes antidegradation policy and implementation guidance reviewed by Tetra Tech for several States and EPA Region 8. The States reviewed were: Arizona, Pennsylvania, Delaware, West Virginia, Wyoming, and Oregon. These States, as well as Region 8 represent a range of policies and level of guidance with respect to antidegradation in water quality standards. The following section presents various options identified by Tetra Tech, broken out by major aspects of antidegradation implementation guidance.

3.1 Definition of Antidegradation and Review

Each State has a slightly different definition of antidegradation, although some (West Virginia, Wyoming, and Region 8) never define the term in their document. In Arizona's implementation guidelines, R18-11-107, antidegradation is defined as, "The determination of whether there is any degradation of water quality in a navigable water" (on a pollutant by pollutant basis). Arizona's more thorough implementation procedures, drafted April 2008, changes the definition to, "A regulatory policy and implementation procedure adopted by EPA and ADEQ to protect existing uses of surface waters and to specify how ADEQ will determine, on a case-by-case basis, whether and to what extent, existing water quality may be lowered in a surface water." Delaware's document states, "Antidegradation refers to policies and procedures designed to prevent or minimize the reduction of water quality below existing levels," while Pennsylvania states, "The basic concept of antidegradation is to promote the maintenance and protection of existing water quality for High Quality (HQ) and Exceptional Value (EV) waters, and protection of existing uses for all surface waters because it recognizes that existing water quality and uses have inherent value worthy of protection and preservation." Oregon's definition is more detailed; "An antidegradation policy provides a means for maintaining and protecting water quality of surface waters by requiring that all activities with the potential to affect existing water quality undergo review and comment prior to any decision to approve or deny a permit or certificate for the activity."

While the definitions for antidegradation and antidegradation policy vary, each State has the same definition for antidegradation review as, "the process by which the State determines that antidegradation requirements are satisfied for a given regulated activity that may have an effect on surface water quality."

The above differences in definition of antidegradation suggest a continuum in terms of how detailed the implementation guidance may be, what may trigger an antidegradation review, and possibly, level of detail of the review itself. Delaware's definition is the simplest option and perhaps most open to flexible interpretations. It also is based solely on existing water quality which is easiest to measure and define but may or may not be that which is necessary to maintain achievable beneficial uses of a waterbody. Arizona's current definition is also relatively simple and specifies "navigable water", which could be construed as a more limited definition than their proposed draft definition or those provided by other States reviewed.

Oregon's definition implies more screening of activities in terms of when an antidegradation review is required but is otherwise similar to Delaware's interpretation. Pennsylvania's definition is more detailed than the ones above in that it specifies high quality and exceptional value waters, indicating importance assigned to these waters. This is in contrast to Arizona's proposed definition, which focuses on whether and how much existing water quality can be lowered.

3.2 Definition of Existing Water Uses

Section a.1 and a.2.(C)of Alaska's antidegradation policy states that "existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected". The implementation guidance should define the term "existing uses". All the States, except Oregon, and Region 8 defined existing uses as those uses actually attained in a waterbody on or after November 28, 1975, whether or not it is included in the water quality standards. This is a standard definition derived from EPA guidance and would be appropriate for Alaska to use as well.

3.3 Baseline or Existing Water Quality

To complete an antidegradation review, the water segment receiving a new or expanded regulated discharge needs to have baseline or existing water quality characterized prior to the discharge. In Arizona's implementation guidelines, R18-11-107, Delaware, and Region 8, the applicable procedures

used to characterize existing background quality that are used for purposes of developing TMDLs are followed. The characterization of existing background water quality should appropriately consider spatial and temporal variability. However, where background data are limited, it may be concluded that a segment is high quality and subject to Tier 2 protection based on ancillary data such as land use information, population and demographics, geology, presence of point or nonpoint sources, climatological data, or the health of the aquatic community.

Arizona's 2008 draft implementation procedures gives a very detailed approach for determining baseline water quality. In general, baseline water quality for perennial waters is based on existing assessments conducted under ADEQ monitoring and assessment programs. Other data collected by a federal or state agency, the regulated entity, the public, or any other source may be used as long as the data: 1) were collected in accordance with an approved quality assurance project plan; and 2) were collected using specified assessment or sample collection and analysis protocols. The data should be no older than 5 years and should include at least 4 samples (one sample per quarter) over a minimum one-year period. Where no, or few data exist, the data are collected from immediately upstream of the proposed discharge location. In general, the agency will perform an arithmetic average of all credible data to determine baseline water quality for a particular pollutant. Due to the lack of flow on intermittent, effluent dependent, and ephemeral waters, and the highly managed nature of canal systems, which are subject to Tier 1 protection levels, ADEQ does not require a determination of baseline water quality on these waters.

West Virginia defines baseline water quality as the ambient concentration established at the time of initial antidegradation review. Where baseline water quality has not been established for the water segment or the parameter of concern, data from a federal or state agency, the regulated entity, the public, or any other source can be used as long as the data are recent and reliable. If adequate data are not available, the regulated entity may be required to provide baseline water quality for those parameters of concern.

Currently, DEC collects water quality information through a public solicitation and through a year round waterbody nomination process. Information is assessed by a multi-state agency process called the Alaska Clean Water Actions (ACWA). Based on this assessment, a waterbody is placed in a one of the CWA categories in the state's Integrated Report. DEC actively solicits all existing and readily available

water quality data and information in accordance federal EPA guidance. This includes, but is not limited to waters for which water quality problems have been reported by local, state, or federal agencies; members of the public; or academic institutions. These organizations and groups are solicited for research they may be conducting or reporting. University researchers, the United States Department of Agriculture, the National Oceanic and Atmospheric Administration, the United States Geological Survey, and the United States Fish and Wildlife Service are examples of such sources of field data. DEC actively accepts and solicits water quality data and information on a continuous basis. Additionally, formal public notice is made every two years soliciting such information as part of the development of the Integrated Report. DEC considers and evaluates data and information from a wide range of sources, such as those listed below:

- previous reports prepared to satisfy CWA Sections 305(b), 303(d) and 314 and any updates reports of ambient water quality data including state ambient water quality monitoring programs, complaint investigations, etc., from the public and other readily available data sources (e.g., STORET (an EPA environmental database), USGS, research reports, etc.), and data and information provided in public comments
- reports of dilution calculations or predictive models
- water quality management plans
- Superfund (contaminated sites) Records of Decision
- Safe Drinking Water Act source water assessments

In addition to these conventional sources of data DEC also considers water quality data and information from citizen volunteer monitoring networks. General Considerations for All Waterbody Categories DEC will consider the following when evaluating a water for the Section 303(d) list of impaired waters (Category 5), when removing a water from the impaired waters list, or in making an attainment determination. DEC will review data considering whether typical elements of a quality assurance project plan (QAPP) is submitted for water quality data and information. A QAPP checklist for sampling, QA project plan review checklist, and elements of a good QAPP can be found on DEC's web site at http://www.dec.state.ak.us/water/wqapp/wqapp_index.htm.

Water quality data and information collected and submitted without a QAPP, or using a QAPP with weak confidence, will not be relied on to make an impairment determination. DEC makes impairment determinations based on credible data. Credible data means scientifically valid chemical, physical, or

biological monitoring data collected under a scientifically accepted sampling and analysis plan, including quality control and quality assurance procedures that are consistent with Alaska's water quality standards in 18 AAC 70. Water quality data and information that is less than five years is preferred. In certain instances, data and information over five years old may be considered in an impairment determination only if it is carefully scrutinized, reviewed, and validated as credible.
(Information from Alaska's Final 2008 Integrated Water Quality Monitoring and Assessment Report; April 1, 2008 Alaska Department of Environmental Conservation.)

Based on this review, options for determining existing water quality include:

Option A – Use the same procedures used to make "impaired waters" decisions, considering spatial and temporal variability.

Option B – Use recent data from existing assessments conducted under State monitoring and assessment programs.

Option C – Use recent data from other reliable sources as long as it was collected in accordance with an approved quality assurance plan and was collected using specified assessment or sample collection and analysis protocols.

Option D – Have the applicant provide the data for parameters of concern over a specified time period.

3.4 Nonpoint Sources

In Arizona, non-point source discharges are not exempt from antidegradation requirements, as ADEQ has statutory authority to adopt rules to regulate non-point source discharges of pollutants to surface waters. However, ADEQ has not yet used this authority to establish a regulatory program and thus they are not regulating nonpoint discharges that are subject to ADEQ antidegradation review.

West Virginia states that, "Nonpoint source activities will be deemed to be in compliance with antidegradation requirements with the installation and maintenance of cost-effective and reasonable best management practices…" The State does note that if the "BMPs are demonstrated to be inadequate to reduce or minimize water quality impacts, the Secretary may require that more appropriate BMPs be developed and applied". Such an approach for applying antidegradation reviews to nonpoint pollutant sources in Alaska would be recommended, if the state chooses to include nonpoint pollution in its antidegradation program.

3.5 Significant Degradation

In Arizona, Delaware, Oregon and Region 8, significant degradation may be demonstrated with respect to any one (or a combination) of the following factors:

a) percent change in ambient concentrations predicted at the appropriate critical condition(s),
b) the difference, if any, between existing ambient quality and ambient quality that would exist if all point sources were discharging at permitted loading rates,
c) percent change in loadings (i.e., the new or expanded loadings compared to total existing loadings to the segment or, for existing facilities only, the proposed permitted loadings compared to the existing permitted loadings),
d) percent reduction in available assimilative capacity,
e) nature, persistence, and potential effects of the parameter,
f) potential for cumulative effects,
g) predicted impacts to aquatic biota,
h) degree of confidence in any modeling techniques utilized, and
i) the difference, if any, between permitted and existing effluent quality

Also, in Delaware and Region 8, proposed activities that would lower the ambient water quality of any parameter (e.g., numeric criterion measurement) by more than 5%, reduce the available assimilative capacity by more than 5%, or increase pollutant loadings by more than 5% will, by rule-of-thumb, be presumed to pose significant degradation.

In Arizona's 2008 draft implementation procedures, significant degradation is defined as, "the consumption of 20% or more of the assimilative capacity for any pollutant or any consumption of assimilative capacity that exceeds a cumulative cap of 50% of assimilative capacity.

In West Virginia, for Tier 2 waters, degradation is significant if a regulated activity results in a reduction in the water segment's available assimilative capacity (the difference between the baseline water quality and the water quality criteria) of 10% or more at the appropriate critical flow condition(s) for parameters of concern. Degradation will also be deemed significant if the proposed activity, together with all other activities allowed after the baseline water quality is established, results in a reduction in the water segment's available assimilative capacity of 20% or more at the appropriate critical flow

conditions for the parameters of concern. Significant degradation is determined on a parameter-by-parameter basis for each parameter of concern that might be affected by the regulated activity.

Wyoming has similar language as West Virginia's regarding significant degradation, but notes that if the activity results in only temporary or short term changes in water quality, then it will not be considered significant degradation if water quality returns to pre-discharge conditions. Several other States have a similar policy.

While several States recognize many indicators that would demonstrate the potential for significant degradation, nearly all written implementation policies to date rely on assimilative capacity or pollutant loading changes caused by the activity or discharge. This is understandable because predictions of potential impact are most readily addressed using water quality modeling, which relies on loads as inputs. However, there is no universal percentage of assimilative capacity use or consumption that is likely to be appropriate for all waterbodies. Potential impacts to aquatic biota are more difficult to predict although there are several tools available (ecological risk assessment models, species sensitivity distribution analyses, etc.). All models are subject to uncertainties and these should be carefully reviewed as part of any antidegradation analysis. Some modeling techniques may not fully account for cumulative effects for example, or may under- or overestimate effects on biota.

Given the State implementation procedures reviewed, options to consider for determining that degradation is significant include:

Option A – Lowering ambient water quality of any parameter by more than 5%, reduce the available assimilative capacity by more than 5%, or increase pollutant loadings by more than 5%. This is the most restrictive of the options identified.

Option B – Reduction in assimilative capacity of 10% or more for parameters of concern and reduction in assimilative capacity of 20% or more for cumulative impacts (i.e., as a sort of "cap" on total degradation). This is an intermediate option.

Option C – The consumption of 20% or more of the assimilative capacity for any pollutant or any consumption of assimilative capacity that exceeds a cumulative cap of 50% of assimilative capacity. This is the least conservative of the options identified.

3.6 Identification of Tiers

Federal regulation lays out a 3-tiered approach to antidegradation implementation. Most States have Tiers 1, 2, and 3 as defined by the Clean Water Act, while some States include a Tier 2.5. In general Tier 1 is the basic water quality protection afforded to all waters, as defined by use-based water quality criteria, while Tier3 protects Outstanding National Resource Waters and allows only temporary and minimal degradation. A discussion of Tier3 or Outstanding Natural Resource Waters is presented in the next section. This discussion focuses primarily on what is protected under Tier2, which varies among States.

In Arizona's implementation guidelines, R18-11-107, Delaware, and Region 8, decisions regarding whether a waterbody is subject to Tier 2 protection requirements is based on best professional judgment of the overall quality and value of the segment. In general, waterbodies with existing water quality that is better than necessary to support fishable/swimmable uses (i.e., exceeds minimum water quality critiera) is subject to Tier 2 requirements. Note that attainment of both aquatic life (fishable) and recreational (swimmable) uses is not required for these programs. In general, Tier 1-only waters are those segments where fishable/swimmable goal uses are not attained, or where assimilative capacity does not exist for <u>any</u> of the parameters that would be affected by the proposed activity.

In Arizona's 2008 draft implementation procedures, Tier 1 and Tier 2 protection are applied on a pollutant-by-pollutant basis. Tier 1 protection is afforded for the pollutants not meeting water quality criteria and Tier 2 protection for pollutants that are equal to or better than water quality criteria. Tier 1 protection also categorically applies to all non-perennial surface waters (e.g., all intermittent streams and ephemeral waters), effluent dependent waters, all canals, and all waters on the state's 303(d) list for the pollutants that resulted in the surface water being listed.

In Oregon, high quality waters are those which have water quality that meets or is better than all water quality standards. While this is not referred to as a "Tier 2" waterbody by ODEQ, it is afforded the same protection as Tier 2 waterbodies in other states. This is in contrast to Arizona and some other States in which the waterbody is classified on a water quality parameter-by-parameter basis (thus, in these States, a waterbody can be simultaneously water quality limited or impaired for one parameter but high quality for other parameters). Oregon also has water quality-limited waters, which are those waters that a) do not meet water quality standards during the entire year or defined season even after

implementation of standard technology, b) only meet water quality standards through the use of higher than standard technology, or c) insufficient information exists to determine if water quality standards are being met. This is different from the other states' Tier 1 waters in which there are circumstances when the water can be further degraded. The review process is apparently the same as that for high quality waters.

Pennsylvania has high quality waters, which are similar to Tier 2 waters. These waters should have "suitable" chemical or biological conditions. For the chemical condition, a surface water is high quality if long-term water quality (at least 1 year of data) for 12 chemical parameters is better than levels necessary to support propagation of fish, shellfish, and wildlife and recreation. The 12 parameters include dissolved oxygen, iron, dissolved copper, temperature, dissolved arsenic, dissolved lead, aluminum, dissolved nickel, dissolved cadmium, pH, ammonia nitrogen, and dissolved zinc. In addition, at least 24 samples should be collected at intervals that have been clearly timed over the flow year. For the biological condition, one of the following must be met: a) in comparison to a reference stream, the water shows a macroinvertebrate community score of 83% or greater using a protocol based on EPA's Rapid Bioassessment Protocol (RBP); or b) the water is a designated Class A wild trout stream. If either the stream chemistry data or the stream biology data meets the respective qualification criteria, the stream qualifies as high quality.

West Virginia affords Tier 2 protection to high quality waters. High quality waters are those waters whose quality exceeds levels necessary to support recreation and wildlife and the propagation and maintenance of fish and other aquatic life. These waters may not exceed the level of quality needed to meet or exceed numeric criteria for every parameter. West Virginia affords protection based on the minimum uses being attained, not the numeric water quality. Therefore, a water segment listed on the state's 303(d) list may be afforded Tier 2 protection if the parameter(s) for which the water segment is listed does not result in that water's failure to attain minimum uses and where all other parameters exceed the quality necessary to support recreation and wildlife and the propagation and maintenance of fish and other aquatic life. For example, if a waterbody is impaired for recreational uses due to high bacteria concentrations, it would still be protected at Tier 2 levels for dissolved oxygen, metal concentrations, and so on if actual values for those parameters exceeded minimum water quality criteria.

In Wyoming, Tier 2 protection applies to waters which have an existing quality that is better than the established use-support criteria and where an assimilative capacity exists for parameters that might be affected by a proposed activity sometime in the future. These waters are known to support populations of fish and/or drinking water uses.

The review presented above indicates some differences in the way States have addressed Tier 2, and to some extent Tier 1 antidegradation policies. The pollutant-by-pollutant basis used by Arizona, Delaware, Region 8, and Wyoming is relatively easy to determine (assuming the data are available) but could present a complex "bookkeeping" exercise requiring at least some basic modeling. The more holistic approach used by Oregon and West Virginia is attractive in being simpler to track and maintain and is related more directly to the beneficial uses that exist. However, these approaches also require more information in order to determine whether or not a given activity will potentially impact a Tier 2 water. Finally, the Pennsylvania approach for determining Tier 2 waters is an interesting hybrid that uses chemical and biological information but relies on a carefully defined range of data (12 physicochemical parameters and macroinvertebrate assessment). However, it is unclear how these data provide information regarding Tier 2 based on recreational uses. Also this approach does require a fair amount of data, though most of the parameters are commonly measured. In summary, options for this aspect of the implementation guidance include:

Option A – All waters protected at Tier 1 and Tier 2 level via pollutant by pollutant antidegradation approach, the simplest and most straightforward approach

Option B – Consideration of biological and other data of a waterbody similar to a reference waterbody.

3.7 Outstanding National Resource Waters

Section (a).3. of Alaska's antidegradation policy requires that outstanding national resource waters (ONRWs) be maintained and protected. Each State reviewed, with the exception of Pennsylvania, has a criterion to identify ONRWs in their guidance document. Arizona's implementation guidelines, R18-11-107, uses the term Unique Waters and the factors to be considered are:

1. the navigable water is of exceptional recreational or ecological significance because of its unique attributes, including but not limited to, attributes related to the geology, flora, fauna, water quality, aesthetic values or the wilderness characteristics of the navigable water

2. threatened or endangered species are known to be associated with the navigable water and the existing water quality is essential to the maintenance and propagation or provides critical habitat to the species.

Any proposed activity that would result in a permanent new or expanded direct source of pollutants to any segment which has been designated as a Unique Water is prohibited. Also, any proposed activity that would result in a permanent new or expanded indirect source of pollutants (e.g., an upstream source) to a Unique Waters segment is prohibited except where such source would have no effect on the existing quality of the downstream Unique Waters segment. Arizona's 2008 draft implementation procedures uses the term Outstanding Arizona Waters (OAWs) but is otherwise very similar.

In Delaware and Region 8, the factors to be considered in determining whether to assign an ONRW designation may include the following:

a) location (e.g., on federal lands such as national parks, national wilderness areas, or national wildlife refuges),
b) previous special designations (e.g., wild and scenic river),
c) existing water quality (e.g., pristine or naturally-occurring),
d) ecological value (e.g., presence of threatened or endangered species during one or more life stage),
e) recreational or aesthetic value (e.g., presence of an outstanding recreational fishery), and
f) other factors that indicate outstanding ecological or recreational resource value (e.g., rare or valuable wildlife habitat).

In Arizona, Delaware, and Region 8 outstanding water quality is not a prerequisite for ONRW designation. These States also allow public nomination of any state water for ONRW protection at any time by sending a written request. In Arizona, the written request should contain a map and a description of the navigable water; a written statement in support of the nomination, including specific reference to the applicable criteria for unique waters classification; supporting evidence demonstrating that one or more of the applicable unique waters criteria has been met; and relevant water quality data. Delaware and Region 8's only requirement is that the segment have outstanding value as an aquatic resource, which may derive from the presence of exceptional scenic or recreational attributes, or from the presence of unique or sensitive ecosystems. Any proposed activity that would result in a permanent

new or expanded direct source of pollutants to any segment is prohibited, regardless of effluent quality. Upstream sources are also prohibited except where such source would have no effect on the existing quality of the ONRW.

Delaware and Region 8 also have a Tier 2.5, which is for Outstanding State Resource Waters (OSRW). The requirements for these waters are exactly the same as those for ONRWs. The only difference is that proposed activities, both direct and indirect, that would result in a permanent lowering in OSRW water is prohibited, except on a case-by-case basis where proposed expansions would also upgrade treatment levels, and if it serves to maintain or enhance the value, quality, or use of the OSRW.

Outstanding resource waters in Oregon must be high quality waters and must constitute an outstanding state or national resource based on its extraordinary water quality, ecological values, or requirement for special water quality protection in order to maintain critical habitat areas. This is interpreted to prohibit new or expanded sources from discharging directly to an ORW or upstream of an ORW if it results in a change in water quality within the ORW.

Pennsylvania provides "outstanding national resource" protection to its Exceptional Value waters. To be an Exceptional Value water it must first qualify as a high quality water and then possess one or more of the following:

- Location in a national wildlife refuge or state game propagation and protection area
- Location in a designated state park natural area or state forest natural area, national natural landmark, federal or state wild river, federal wilderness area or national recreation area
- Qualification as an outstanding nation, state, regional, or local resource water
- Exceptional regional significance
- A score of at least 92% (or its equivalent) using the biological assessment qualifier
- Qualification as a Wilderness Trout Stream

In West Virginia, ONWRs include, but are not limited to, all streams and rivers within the boundaries of Wilderness Areas designated by the Wilderness Act within the State; all federally designated rivers under the "Wild and Scenic Rivers Act"; all streams and other bodies of water in State parks which are high quality waters or naturally reproducing trout streams; waters in national parks and forests which

are high quality waters or naturally reproducing trout streams; waters designated under the "National Parks and Recreation Act of 1978"; and those water whose unique character, ecological or recreational value, or pristine nature constitutes a valuable national or state resource. Any proposed activity that would result in a permanent new or expanded discharge upstream of an ONRW segment is prohibited except where such source would improve or not degrade the existing water quality of the downstream ONRW segment.

Wyoming considers water quality, aesthetic, scenic, recreational, ecological, agricultural, botanical, zoological, municipal, industrial, historical, geological, cultural, archaeological, fish and wildlife, the presence of significant quantities of developable water, and other values of present and future benefit to the people when designating outstanding waters. In addition, all surface waters located within the boundaries of national parks and congressionally designated wilderness areas as of January 1, 1999 are classified as outstanding aquatic resources. They prohibit new or increased "end-of-the-pipe", effluent dischargers of pollution, but allow limited discharges associated with stormwater runoff and construction activities.

The above summary indicates a number of possible criteria for defining ONRWs. Some definitions (e.g., Wyoming and West Virginia) may be relatively easy to implement because national parks and similar areas may automatically be criteria for designating ONRWs. Where such parkland is scarce within a State, such a criterion may be appropriate. Several States may define ONRWs on the basis of presence of endangered species or critical habitat. This criterion could lead to a large number of ONRWs where an endangered species is widespread (though not necessarily abundant), such as certain salmon species, or in a State where multiple endangered species occur in various habitats. Those criteria related to unique or exceptional significance may capture the spirit of Tier 3 designation but may be difficult to determine. Such a value process would require some transparent, credible guidelines to enable a meaningful and productive public process.

The following are broad options identified. Clearly, some of these may have several suboptions as well.

Option A – Must meet or exceed all water quality criteria.
Option B – Outstanding water quality is not a prerequisite.
Option C – Threatened or endangered species are known to be associated with the waterbody.

Option D – Exceptional recreational or ecological significance because of its unique attributes.

Option E – Location, previous special designations, existing water quality, ecological value, recreational or aesthetic value, etc.

Option F – All waterbodies within wilderness areas, state and federal parks, etc.

3.8 Antidegradation Review Trigger

In Arizona's 2008 draft implementation procedures, a finding of predicted significant water quality degradation triggers comprehensive Tier 2 antidegradation review. However, it should be noted that pollutants of concern for Tier 2 antidegradation reviews include those pollutants reasonably expected to be present in the discharge for which a numeric water quality standard exists.

In Delaware and Region 8, antidegradation requirements are triggered whenever a regulated activity is proposed that may have some effect on surface water quality. "Regulated activities" typically include NPDES-permitted discharges – such as those issued for wastewater plants, industrial facilities, concentrated animal feeding operations, and municipal separate storm sewer systems, Clean Water Act Section 404 permits issued by the US Army Corps of Engineers, and other activities regulated by state permits, reviews, or approvals.

In Oregon, the antidegradation review must be considered for every DEQ water quality action. 401 water quality certifications, new NPDES permits, or a permit renewal that will result in a new or increased load or lower water quality are subject to an antidegradation review.

In West Virginia, any regulated activity in a Tier 2 water segment is required to go through the Tier 2 antidegradation review process where:

a) The regulated activity is a new or expanded activity that would significantly degrade the water quality; or
b) The Secretary determines, upon renewal of a permit or certification, that other individual circumstances warrant a full review such as cumulative degradation resulting from multiple discharges within a watershed, degradation resulting from a single discharge over time, or degradation caused by a regulated facility's historic noncompliance with its permit.

Many State implementation guides do not present specific policies regarding review triggers, noting that such triggers are made on a case-by-case basis. Some options identified in our review include:

Option A – Predicted significant degradation based on load allocation or assimilative capacity modeling. This option is fairly straight forward but assumes high certainty in the pollutants of concern and modeling inputs.

Option B – Whenever any activity regulated under state or federal rules is proposed that may have some effect on water quality. This option is very general and may be too vague to sufficiently guide antidegradation analytical reviews or defend against legal scrutiny.

Option C – Upon application for a new or expanded NPDES or CWA Sec 404 permit application. This is the easiest option to implement and may be clearest.

3.9 Thermal Discharge Impairment

Section a.4 of Alaska's antidegradation policy is relevant when water quality impairment is associated with a thermal discharge. The only State to mention impairment due to thermal discharge is Delaware and their document refers to Section 316 of the Clean Water Act. Indication that the antidegradation policy described in this section is subject to 33 U.S.C. 1326 (commonly known as section316 of the Clean Water Act) is sufficient.

3.10 Requirements for Alternatives Analysis

Requirements that a proposed new or expanded discharge be "necessary" to accommodate important economic or social development implies that at least some examination of alternatives to the proposed activity has occurred. In Arizona, Delaware, Region 8, and West Virginia, the applicant is required to prepare an evaluation of alternatives. The evaluation must provide, at a minimum, substantive information pertaining to the costs and environmental impacts associated with the following alternatives:

- pollution prevention measures
- reduction in scale of project
- water recycle or reuse
- process changes
- innovative treatment technology
- advanced treatment technology

- seasonal or controlled discharge options to avoid critical water quality periods
- improved operation and maintenance of existing treatment systems
- alternative discharge locations (e.g., to the soil, or to another surface water location)

In Delaware and Region 8, non-degrading or less-degrading pollution control alternatives with costs that are less than 110% of the costs of the pollution control measures associated with the proposed activity are considered reasonable.

Oregon considers a few of the above mentioned alternatives, but also considers:

- recycling or reuse with no discharge
- discharge to on-site system
- discharge to sanitary sewer
- land application

The evaluation of these alternatives provides information pertaining to the effectiveness, costs, and environmental impacts of the alternatives, as well as discussions of their technical and economic feasibility.

Pennsylvania must complete an affordability analysis and a direct cost comparison of alternatives. If a nondischarge alternative is not cost-effective and environmentally sound, the applicant must utilize the best available combination of technologies. This process is known as the antidegradation best available combination of technologies or ABACT.

Wyoming has general guidance, stating that the assessment shall at a minimum address practical water quality control technologies, the feasibility and availability of which has been demonstrated under field conditions similar to those of the activity under review.

Based on the above findings, a few alternatives that could be considered are:

Option A – Analysis should contain information on possible alternatives and their effectiveness, costs, environmental impacts, and technical and economic feasibility

Option B – Complete an affordability analysis and direct cost comparison for selected alternatives

Option C – Address practical water quality control technologies and proven alternatives, the feasibility and availability of which has been demonstrated under similar conditions

3.11 Important Economic or Social Development

Section a.2.(A) requires that "allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located". The implementation guidance needs to address what constitutes an important economic or social development.

In Arizona, Delaware, Region 8, and West Virginia, the factors to be addressed include, but are not limited to:

a) employment (i.e., increasing, maintaining, or avoiding a reduction),
b) increased production,
c) improved community tax base,
d) housing, and
e) correction of an environmental or public health problem.

Where information is not sufficient to make a preliminary determination regarding the socio-economic costs or benefits associated with the proposed activity, the applicant may be required to submit information about the following:

- information pertaining to current aquatic life, recreational, or other water uses;
- information necessary to obtain the environmental impacts that may result from the proposed activity;
- facts pertaining to the current state of economic development in the area;
- government fiscal base; and
- land use in the areas surrounding the proposed activity.

Pennsylvania and Oregon require similar factors be addressed but Oregon also sites local economy, household income, indirect effects to other businesses, and increases in sewer fees as indicators. In Oregon, for both high quality and water quality limited waters, the applicant must provide DEQ with enough information to allow for a financial impact analysis that assesses whether allowing an activity that lowers water quality has socioeconomic benefits that outweigh the environmental costs. It should be noted that the process evaluation differs between public and private sector developments.

Wyoming's implementation states that, "If the applicant submits evidence that the activity is important for development, it shall be presumed important unless information to the contrary is submitted in the

public review process. The determination shall take into account information received during the public comment period and shall give substantial weight to any applicable determinations by local governments or land use planning authorities."

Options for addressing socio-economic impacts or development as part of an antidegradation review are generally similar to those used by federal agencies for NEPA and EIS projects in evaluating alternatives. Specific tools used to determine social or economic benefits vary among programs and one might expect differences in antidegradation decisions depending on which tools are used and the input data available. For this aspect of implementation guidance, options may be more related to the actual factors considered (e.g., Arizona versus Oregon requirements). Wyoming's approach is relatively general and may not withstand legal challenges as effectively as other approaches mentioned above.

3.12 Public Participation and Intergovernmental Review

Section C of Alaska's antidegradation policy states that the application is subject to public participation and intergovernmental review, but this process should be outlined in the implementation guidance. In Arizona and Delaware, the minimum intergovernmental coordination process requires that copies of the completed antidegradation review worksheet and/or public notice be provided to state and federal government agencies along with a written request to provide comments by the public comment deadline. Both Arizona and Region 8 state that because the socio-economic importance of a proposed activity is a question best addressed by the local interests, particular weight will be given to the comments submitted by local governments, land use planning authorities, and other local interests in determining whether the balancing of benefits and costs that was the basis for the preliminary decision was appropriate. Based upon comments and information received during the public comment period, the preliminary determination regarding the social or economic importance may be reversed. Also, in Delaware and Region 8 public participation occurs regardless of the outcome of the preliminary decision. In Pennsylvania, the Department will hold a public hearing on a proposed new, additional, or increased discharge to Exceptional Value Waters when requested by an interested person on or before the termination of the public comment period on the discharge. Oregon only goes through the public participation and intergovernmental coordination if the review process yields a recommendation to approve the proposed activity. West Virginia and Wyoming require intergovernmental coordination and public participation, but not much detail is given as to their procedures.

Option A – Occurs regardless of preliminary decision.

Option B – Occurs only if preliminary decision yields a recommendation to approve the proposed activity.

Summary of Options Identified for Antidegradation Implementation Guidance

Antidegradation Policy Issue	Option 1	Option 2	Option 3	Option 4
Baseline Water Quality*	Employ same procedures used to make "impaired waters" decisions Pros: procedures are already in place; high level of data credibility; high confidence regarding waterbody status; consistent with TMDL program and 303(d) assessments; assessment of assimilative capacity inherent in procedures Cons: may require considerable effort or time by DEC; resource intensive; data are often limited spatially or temporally for parameter(s) of concern; lack of data could cause delays	Base upon existing assessments conducted under monitoring and assessment programs Pros: data already available; follows DEC program quality assurance procedures so data quality should be adequate; integrates well with current ACWA assessment process; allows for new data to be collected by third parties Cons: slightly less data credibility as Option 1, but allows for more data collection; often unavailable or sparse for parameters of concern; assumes a fairly extensive monitoring program, which may not be feasible for Alaska; might need to use "pristine waters composite" with "rebuttable presumptions" for BWQ parameters for water in unimpacted areas	Use data from a federal or another state agency, or any other source, as long as the data are recent and reliable Pros: DEC doesn't need to collect data; similar to current ACWA procedures Cons: data often unavailable or sparse; difficult to ensure adequate data quality or comparability of methods used; credibility level lower than Option 2; more resource-intensive to manage	Have the applicant provide the data for parameters of concern over a specified time period Pros: requires less work for the State, straightforward; can require necessary data quality; could use in combination with Option 2 to produce "pristine waters composite" with "rebuttable presumptions" for BWQ parameters for water in unimpacted areas Cons: heavy monitoring and assessment burden for permittees; requires oversight; schedule may not be ensured; may require some negotiation with applicant; may not be accurate baseline if other recent changes have taken place
Significant Degradation**	20% assimilative capacity consumption allowance and cumulative cap of 50% of available assimilative capacity from baseline water quality Pros: cumulative cap provides permanent protection for waters; objective, quantitative criteria; transparent	Lowering ambient water quality of any parameter by more than 5%, reduce the available assimilative capacity by more than 5%, or increase pollutant loadings by more than 5% Pros: provides the most water quality protection; objective, quantitative criteria; transparent	Reduction in assimilative capacity of 10% or more for parameters of concern and if all activities result in a reduction in assimilative capacity of 20% or more Pros: provides high level of water quality protection; provides for cumulative cap of 20%; objective, quantitative criteria;	

	Cons: allows for most water quality degradation of all options; single number may not be appropriate for all waterbodies	Cons: lack of a cumulative cap might allow incremental degradation down to water quality criteria for any/all parameters; most restrictive; single number may not be appropriate for all waterbodies	transparent ; intermediate option Cons: less water quality protection than Option 2; single number may not be appropriate for all waterbodies	
Tier Assignment	All waters protected at Tier 1 and Tier 2 level via pollutant by pollutant antidegradation approach Pros: simple and straightforward; consistent with most State antidegradation approaches Cons: creates a "bookkeeping" approach that might be data-intensive for waters in developed or impacted areas; can be counterintuitive at times, a stream is Tier 2 for some parameters but not others	Consideration of biological and other data of a waterbody similar to a reference waterbody Pros: more holistic; simpler to track and maintain; considers full range of chemical, biological, physical, geomorphic, sediment transport, and other structural and functional attributes Cons: requires more assessment data than current approaches; requires more resources to analyze and assess structure and function; requires known reference conditions		
Outstanding National Resource Waters	All waterbodies within wilderness areas, state and federal parks, etc. Pros: easy to implement; easy to justify Cons: could lead to a large number of ONRWs; some waters might be impacted already; might need to exempt or allow for some to remain at current water quality	Exceptional recreational or ecological significance because of its unique attributes Pros: allows for flexibility; includes pristine waters lying outside of public lands; provides high level of water quality protection; provides "rebuttable assumption" that unimpacted waters are pristine Cons: might be resource intensive to manage; decisions may be difficult to determine; subject to debate	Threatened or endangered species are known to be associated with the water Pros: provides protection for T&E species; links high level antidegradation approach to high profile environmental issues Cons: T&E species distribution is often unknown; T&E areas are not always outstanding resources otherwise; could lead to a large number of ONRWs in AK; might be resource intensive to manage	Must meet or exceed all water quality criteria Pros: can be fairly restrictive; objective; would include the most waters for Tier 3 antidegradation protection Cons: natural conditions may exceed WQC but still be exceptional waters; could result in numerous ONRWs in AK; might be seen as detrimental to mining and other development

Antidegradation Review Trigger	Predicted significant degradation based on load allocation or assimilative capacity modeling. Pros: quantitative triggers are repeatable and understood; captures major impacts Cons: assumes high certainty in the pollutants of concern and modeling inputs; might miss some activities with the capacity to degrade water quality significantly	Whenever any activity regulated under state or federal rules is proposed that may have some effect on water quality. Pros: captures most activities that might result in degradation; can require applicant to conduct analyses; unlikely to be subject to challenge Cons: places burden on applicants, regardless of size and capacity to conduct analysis	Upon application for a new or expanded NPDES or CWA Sec 404 permit application. Pros: easier to implement ; straightforward; consistent with most current state approaches Cons: might omit some state-permitted activities with capacity for significant water quality degradation	
Requirements for Alternatives Analysis	Analysis should contain information on possible alternatives and their effectiveness, costs, environmental impacts, and technical and economic feasibility Pros: comprehensive; most rigorous of proposed approaches; provides for the highest degree of certainty; less prone to challenge Cons: time-consuming review; places heavy analytical burden on applicants	Complete an affordability analysis and direct cost comparison for selected alternatives Pros: addresses socioeconomic factors; limits the level of analysis for applicants to only those the appear to be viable Cons: may not be adequately identify best alternative for environment; could lead to a "cookie cutter" approach that routinely ignores alternatives that might provide more water quality protection	Address practical water quality control technologies and proven alternatives, the feasibility and availability of which has been demonstrated under similar conditions Pros: based on known information and current track records; further limits the level of analysis for applicants; easiest to justify and implement Cons: limited to proven alternatives, further restricting the number and types of options, which may result in more degradation then de minimus	
Public Participation and Intergovernmental Review	Occurs regardless of preliminary decision Pros: always allows for public involvement; provides an ongoing sense of interest and concern for water quality; keeps other agencies and the public	Occurs only if preliminary decision yields a recommendation to approve the proposed activity Pros: saves time and money; easier to manage		

	engaged in water quality protection Cons: may result in lengthy, unnecessary process sometimes; resource intensive; requires more management	Cons: preliminary decision might be challenged or used to charge DEC with bias in further antidegradation review deliberations		

* Alaska should use the current & existing ACWA process to provide the baseline water quality assessments for impacted waters - ie, those in areas of mining, development, & current discharges. Additional information will need to be solicited for some of these waters, but it looks like it is already being done to accommodate EPA integrated reporting procedure.

For the 99.9% of waters that are not impacted at all - those lying in more remote areas, beyond the current dischargers/mining/development areas, an "assumed" set of baseline water quality parameters should be developed based on a composite of current water quality for those "unimpacted" pristine (i.e., reference) waters. This composite would serve as the assumed baseline water quality parameters for all of those waters. The composite would constitute a set of "rebuttable presumptions" that an applicant could refute by providing their own data, at their own expense, under a monitoring/assessment program conducted in accordance with ADEC QAPP requirements. If they could prove actual water quality was different from the "assumed" composite set of parameter values, ADEC would use the actual data.

** We would recommend that any discharger using more than 5% of the assimilative capacity must conduct an alternatives analysis & social/economic justification analysis. We would also recommend an overall cap of less than 50% for cumulative impacts. The cap is a bit of a misnomer because all an applicant has to do is show significant economic or social benefits to receive authorization to use all available assimilative capacity - i.e., take water quality down to minimum water quality criteria.

APPENDIX A

STATES SUMMARY TABLE

Antidegradation Information	Antidegradation Summary Information by State and EPA Region			
	Arizona	Delaware	Oregon	Pennsylvania
Written Antideg Policy Adopted / Year of Adoption		2004 (updated version)		1999
Written Implementation Methods Adopted / Year of Adoption		1999	2001	Pennsylvania Clean Streams Law (35 P.S. §691.1 et seq.) and regulations at Title 25 Pa. Code Title 25, including Chapters 91, 92, 93, 95, 96, 102, and 105; Nov. 2003
Contact / web site	http://www.epa.gov/waterscience/standards/wqslibrary/az/az_9_anti.pdf	http://www.dnrec.state.de.us/water/antidegp.pdf	http://www.deq.state.or.us/wq/pubs/imds/antideg.pdf	Kellie DuBay
How are existing uses defined and the level of WQ needed to protect those uses?	Existing use means a use that is actually attained in the waterbody on or after November 28, 1975, whether or not it is included in the water quality standards.	Existing use means a use that is actually attained in the waterbody on or after November 28, 1975, whether or not it is included in the water quality standards.	Not defined	those uses actually attained in the waterbody on or after November 28, 1975, whether or not those uses have been included in the water quality standards
How is significance of degradation determined?	The likelihood that a proposed activity will pose significant degradation will be judged by the Department for all water quality parameters that would be affected by the proposed activity. Proposed activities will be considered significant and subject to tier 2 requirements where significant degradation is projected for one or more water quality parameter. Significant	Same as Arizona		

	degradation may be demonstrated with respect to any one (or a combination) of the following factors: (a) percent change in ambient concentrations predicted at the appropriate critical condition(s), (b) the difference, if any, between existing ambient quality and ambient quality that would exist if all point sources were discharging at permitted loading rates, (c) percent change in loadings (i.e., the new or expanded loadings compared to total existing loadings to the segment or, for existing facilities only, the proposed permitted loadings compared to the existing permitted loadings), (d) percent reduction in available assimilative capacity, (e) nature, persistence, and potential effects of the parameter, (f) potential for cumulative effects, (g) predicted impacts to aquatic biota, (h) degree of confidence in any modeling techniques utilized, and (i) the difference, if any, between permitted and existing effluent quality.			
Does antideg review apply to nonpoint sources and 401 WQCs?			Conduct a full review. New certifications that will not result in lower water quality do not require a complete review, but the permit record must fully document that no lowering of water quality is expected to occur for any water quality parameter.	Pennsylvania requires the implementation of erosion and sediment control, nutrient management and stormwater management BMPs under the federal Clean Water Act, the Pennsylvania Clean Streams Law, the Nutrient Management Act, and

				the Stormwater Management Act
Which waters are subject to Tier 2 protection and how is this determined?	Decisions regarding whether a waterbody is "high quality" and subject to tier 2 protection requirements will be based on a best professional judgment of the overall quality and value of the segment. In general, water with existing quality that is better than necessary to support fishable/ swimmable uses will be considered "high quality" and subject to tier 2 requirements. Note that attainment of both aquatic life (fishable) and recreational (swimmable) uses is not required in order to quality as a "high quality" segment.	Same as Region 8 and Arizona	Based on the rules OAR 340-041-0006(41) and 340-041-0026(1)(a)(A)(iii), High Quality Waters are those which have water quality that meets or is better than all water quality standards. A High Quality Water is one that is not a Water Quality Limited Water. This interpretation is in contrast to some other States in which the waterbody is classified on a water quality parameter-by-parameter basis (thus, in these States, a waterbody can be simultaneously Water Quality Limited for one parameter but High Quality for other parameters). Therefore, in Oregon, waterbodies must have water quality that meets or is better than all water quality criteria in order to be classified as High Quality Waters (HQW).	
Intergovernmental coordination and public participation provisions required?	Intergovernmental coordination minimum process states that upon request, the Department will provide copies of the completed antidegradation review worksheet and/pr public notice to state and federal government agencies along with a written request to provide comments by the	That Division shall conduct all antidegradation reviews consistent with the intergovernmental coordination procedures included in the State's Continuing Planning Process.	Public participation and intergovernmental coordination will occur if the applicant review process yields a recommendation to approve the proposed activity. DEQ will then consider the various agencies' comments and public comments in reaching a final decision or recommendation to the Environmental Quality Commission	The Department will hold a public hearing on a proposed new, additional, or increased discharge to Exceptional Value Waters when requested by an interested person on or before the termination of the public comment period on the

	public comment deadline. Because the socio-economic importance of a proposed activity is a question best addressed by local interests, the Department will give particular weight to the comments submitted by local governments, land use planning authorities, and other local interests in determining whether the balancing of benefits and costs that was the basis for the Division's preliminary decision was appropriate. Based upon comments and information received during the public comment period, the Division may reverse its preliminary determination regarding the social or economic importance of a proposed activity.	Intergovernmental coordination minimum process states that upon request, the Division will provide copies of the completed antidegradation review worksheet and/pr public notice to state and federal government agencies along with a written request to provide comments by the public comment deadline. The antidegradation review findings will be subjected to Delaware's public participation requirements. A separate public notice for purposes of antidegradation need not be issued.	regarding whether to authorize the proposed activity pursuant to the State's antidegradation requirements. *If the applicant review process results in a denial of the permit, then the applicant has the right to appeal the decision to the Environmental Quality Commission (EQC)*. In this situation, the antidegradation review should be made available to the EQC. If the appeal is successful and the EQC directs DEQ to proceed with a permit, then the antidegradation review will be included in the staff report and made available for public comment and intergovernmental coordination during the usual period for comment on the application.	discharge.
Burden of proof needed to demonstrate that lower WQ is necessary to accommodate important economic or social development	The applicant is required to demonstrate the social and economic importance of the proposed activity.	Same as Arizona	Need a through analysis to demonstrate the costs (see appendix C) and must demonstrate that it is necessary and important	A person proposing a new, additional or increased discharge to High Quality or Exceptional Value Waters, who has demonstrated that no environmentally sound and cost effective nondischarge alternative exists under clause (A), shall demonstrate that the discharge will maintain and protect the existing quality of receiving surface waters, except as provided in subparagraph (iii)."

				The Department may allow a reduction of water quality in a High Quality Water if it finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the Commonwealth's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located
Specific requirements for determining "important economic and social development"	The applicant is required to demonstrate the social and economic importance of the proposed activity. The factors to be addressed in such a demonstration may include, but are not limited to, the following: (a) employment (i.e., increasing, maintaining, or avoiding a reduction in employment), (b) increased production, (c) improved community tax base, (d) housing, and (e) correction of an environmental or public health problem.	Same as Arizona	A number of indicators must be considered, all of which would be projected to occur if a lowering of water quality was not allowed. These include indicators such as increases in unemployment, losses to the local economy, changes in household income, decreases in tax revenues, indirect effects on other businesses, and increases in sewer fees	Public need/social services, public health/safety, quality of life, employment, tax revenues, tourism, etc.
How State assures that existing uses are fully protected while allowing lower WQ	Prior to authorizing any proposed activity that would significantly degrade a tier 2 water, the Department shall ensure that existing uses will be fully protected consistent with the tier 1 implementation	Same as Arizona		

	procedures provided.			
How State evaluates BMPs for NPS control in antideg review				
Criteria used to identify ONRWs	Unique Waters The factors to be considered in determining whether to assign a Unique Waters designation may include the following: 1.) The navigable water is of exceptional recreational or ecological significance because of its unique attributes, including but not limited to, attributes related to the geology, flora, fauna, water quality, aesthetic values or the wilderness characteristics of the navigable water. 2.) Threatened or endangered species are known to be associated with the navigable water and the existing water quality is essential to the maintenance and propagation or the navigable water provides critical habitat. Outstanding water quality is not a prerequisite for Unique Waters designation. The public may nominate any state water for Unique Waters protection by written request. The written request should contain 1. A map and a description of the navigable water; 2. A written statement in support of the nomination, including specific reference to the applicable criteria for unique waters	The factors to be considered in determining whether to assign an ONRW designation may include the following: (a) location (e.g., on federal lands such as national parks, national wilderness areas, or national wildlife refuges), (b) previous special designations (e.g., wild and scenic river), (c) existing water quality (e.g., pristine or naturally-occurring), (d) ecological value1 (e.g., presence of threatened or endangered species during one or more life stages), (e) recreational or aesthetic value (e.g., presence of an outstanding recreational fishery), and (f) other factors that indicate outstanding ecological or recreational resource value (e.g., rare or valuable wildlife habitat). Outstanding water quality is preferred but not a prerequisite for ONRW designation. The public may nominate any state water for ONRW protection at any time by sending a written request. The	By definition at 340-041-0006(42), Outstanding Resource Waters must be High Quality Waters, i.e. a waterbody must meet all water quality criteria. OAR 340-041-0026(1)(a)(D) further clarifies the definition of ORW to mean that the waterbody must also constitute an outstanding state or national resource based on its extraordinary water quality, ecological values, or requirement for special water quality protection in order to maintain critical habitat areas. The Environmental Quality Commission designates a waterbody as an Outstanding Resource Water after a process of nomination, review, and public comment.	Does not give criteria to identify ONRWs

	classification, 3. Supporting evidence demonstrating that one or more of the applicable unique waters criteria has been met; and 4.) Relevant water quality data.	written request should explain why an ONRW designation is warranted based on one or more of the factors identified above.		
Application of antidegradation policies to other activities such as channel and flow alterations				
Determination of cumulative WQ impacts				
Requirements for alternatives analyses	The applicant is required to prepare an evaluation of alternatives. The evaluation must provide, at a minimum, substantive information pertaining to the costs and environmental impacts associated with the following alternatives: pollution prevention measures, reduction in scale of project, water recycle or reuse, process changes, innovative treatment technology, advanced treatment technology, seasonal or	Same as Arizona	In evaluating the alternatives, the discharger/applicant/ source must consider all known, available, and reasonable methods of prevention, control, and treatment to prevent the lowering of water quality. At a minimum, the following alternatives must be considered: • Improved operation and maintenance of existing treatment system	A person proposing a new, additional or increased discharge to High Quality or Exceptional Value Waters shall evaluate nondischarge alternatives to the proposed discharge and use an alternative that is environmentally sound and cost-effective when compared to the cost of the proposed discharge. If a

	controlled discharge options to avoid critical water quality periods, improved operation and maintenance of existing treatment systems, and alternative discharge locations.		• Recycling or reuse with no discharge • Discharge to on-site system • Seasonal or controlled discharges to avoid critical water quality periods • Discharge to sanitary sewer • Land application	nondischarge alternative is not environmentally sound and cost-effective, a new, additional or increased discharge shall use the best available combination of cost-effective treatment, land disposal, pollution prevention and wastewater reuse technologies.

Antidegradation Information	Antidegradation Summary Information by State and EPA Region (continued)		
	Region 8	West Virginia	Wyoming
Written Antideg Policy Adopted / Year of Adoption		Title 47-02, Requirements Governing Water Quality Standards/2008	Chapter 1 – Wyoming Surface Water Quality Standards, Section 8 Antidegradation/2007
Written Implementation Methods Adopted / Year of Adoption		Title 60-05, Antidegradation Implementation Procedures/2008	Wyoming Surface Water Quality Standards Implementation Policies for Antidegradation, Mixing Zones, Turbidity, Use Attainability Analysis/2001
Contact / web site	http://www.epa.gov/region8/water/wqs/wqsdocs.html	http://www.wvsos.com/csr/verify.asp?TitleSeries=47-02 http://www.wvsos.com/csr/verify.asp?TitleSeries=60-05	http://www.epa.gov/waterscience/standards/mixingzone/files/WY_Implementation_Policies.pdf
How are existing uses defined and the level of WQ needed to protect those uses?	Existing use means a use that is actually attained in the waterbody on or after November 28, 1975, whether or not it is included in the water quality standards.	"Existing uses" are those uses actually attained in a water on or after November 28, 1975, whether or not they are included as designated uses in the water quality standards. Tier 1 protection	Water uses in existence on or after November 28, 1975 and the level of water quality necessary to protect those uses shall be maintained and protected.
How is Baseline or Existing WQ Determined or Characterized?	The Division will follow the state procedures used to characterize existing background quality that are used for purposes of developing Total Maximum Daily Loads (TMDLs). The characterization of existing background water quality should appropriately consider spatial and temporal variability. However, where background water column data are limited, the Division may conclude that a segment is high quality and subject to tier 2 protection based on ancillary data such as land use	"Baseline water quality" means that ambient concentration established at the time of an initial antidegradation review for a stream or stream segment or any other water(s) of the state. Where baseline water quality has not been established for the water segment the regulated entity proposes to impact or has not been established for a parameter of concern that is reasonably expected to be discharged into the water segment as a result of the proposed regulated activity, the Secretary must determine the baseline water quality for the receiving water body. The Secretary may consider data	The Antidegradation Implementation Policy identifies "baseline load" under the discussion of determination of significance for Class 2 waters (Tier 2 review). The Implementation Policy states that the baseline total load shall be determined at the time of the first proposed new or increased water quality impacts to the reviewable waters.

	information, population and demographics, geology, presence of point or nonpoint sources, climatological data, or the health of the aquatic community.	for establishing the baseline water quality from a federal or state agency, the regulated entity, the public, or any other source, as long as the data are recent and reliable. If adequate data are not available, the agency may, in conjunction with the regulated entity or on its own initiative, establish a plan for obtaining the necessary data. The regulated entity may be required to provide baseline water quality for those parameters of concern that are reasonably expected to be discharged as a result of the regulated activity into the affected water segment to help the permitting agency determine the baseline water quality, the existing uses, and the applicable tier. The regulated entity may contact the Secretary prior to initiating the baseline water quality evaluation to seek concurrence with its determination of the parameters of concern for is proposed activity and its proposed sampling protocol.	
Definition of new or expanded discharge; when/how is antideg review required?		New or expanded discharge not explicitly defined in the Antidegradation policy or implementation policy. Section 3.7 of the Implementation Policy states, "On or after July 2,200 1, the effective date of these implementation procedures, new and reissued WV/NPDES general permits will be evaluated to consider the potential for significant degradation as a result of the permitted activity."	The Antidegradation Implementation Policy does not explicitly define new or expanded discharge. The language in the Antidegradation Implementation Policy implies that "expanded" discharge means an increase of pollution from an existing discharge.
How is significance of degradation determined?	The likelihood that a proposed activity will pose significant degradation will be judged by the Division for all water quality parameters that would be affected by the proposed activity. Such significance judgments will be made on a parameter-by-parameter basis. The Division will identify and eliminate from further review only those proposed activities that present insignificant threats to water quality. Proposed activities will be considered significant and subject to tier 2 requirements where significant degradation is	Section 5.6.c of the Antidegradation Implementation Policy provides process for determining significant degradation. For Tier 2 degradation is significant if the activity results in a reduction in the water segment's available assimilative capacity (the difference between the baseline water quality and the water quality criteria) of ten percent or more at the appropriate critical flow condition(s) for parameters of concern. Degradation will also be deemed significant if the proposed activity, together with all other activities allowed after the baseline water quality is established, results in a reduction in the water segment's available assimilative capacity of 20% or more at the appropriate critical flow conditions for the parameters of concern. This section excepts	The significance determination shall be made with respect to the net effect of the new or increased water quality impacts of the proposed activity, taking into account any environmental benefits resulting from the activity and any water quality-enhancing mitigation measures impacting the segment or segments under review, if such measures are incorporated with the proposed activity. The activity shall be considered not to result in significant degradation, if: the activity may be permitted

	projected for one *or more* water quality parameters.	discharges affecting dissolved oxygen, pH or fecal coliform will be deemed insignificant provided that specific numeric benchmarks are met. The policy also states that significant degradation will be determined on a parameter-by-parameter basis for each parameter of concern that might be affected by the regulated activity.	under a general permit established by the state for discharges regulated under section 402 of section 404; or the new or increased loading from the source under review is less than 10% of the existing total load to that segment for critical constituents, provided that the cumulative impact of increased loadings from all sources does not exceed 10% of the baseline total load established for the segment; or the new or increased loading from the source under review will consume, after mixing, less than 20% of the available increment between low flow pollutant concentrations and the relevant standards for critical constituents; or the activity will result in only temporary or short tem changes in water quality.
Does antideg review apply to nonpoint sources and 401 WQCs?		401 WQCs are not required to undergo a Tier 2 antidegradation review, provided, however, that where an individual 401 certification is required, the Secretary may require an appropriated antidegradation review. Where section 401 allows for filling of a water, this exemption only applies to the site of the fill, and does not apply to activities downstream of the fill.	- The Department adopted a policy on October 11, 1996 regarding the issuance of 401 certifications for activities on Class 1 waters (Tier 3 protection). This policy was specifically designed to ensure the protection of existing quality and uses of Class 1 waters and serves as the antidegradation implementation procedure for activities subject to 401 certification on Class 1 waters. - Nonpoint sources of pollution are not regulated by permits issued by the Department, but are controlled by the voluntary application of cost effective and reasonable best management practices. For Class 1 waters, best management practices will maintain

			existing quality and water uses.
Which waters are subject to Tier 2 protection and how is this determined?	Segments may be afforded tier 2 protection by the state in one of two ways. The first way is for the Board to assign tier 2 protection through a rulemaking action. Where this occurs, a high quality use designation will be added to the state standards for the segment. The sole implication of a high quality designation in the state water quality control program is that it *mandates* application of the tier 2 review requirements described below. The second way to afford tier 2 protection is for the Division to make a determination that this level of protection is warranted during the antidegradation review of a proposed activity. Such decisions will be based on all relevant information including any ambient water quality (i.e., physical, chemical, biological) data submitted by the applicant. Decisions regarding whether a waterbody is high quality and subject to tier 2 protection requirements will be based on a best professional judgment of the overall quality and value of the segment. In general, waters with existing quality that is better than necessary to support fishable/swimmable uses will be considered high quality and subject to tier 2 requirements.	The existing high quality waters. - 4.1b.l. High quality waters are those waters whose quality is equal to or better than the minimum levels necessary to achieve the national water quality goal uses. - 4.1.b.2. High quality waters may include but are not limited to the following: - 4.1.b.2.A. Streams designated by the West Virginia Legislature under the West Virginia Natural Stream Preservation Act, pursuant to W. Va. Code 922-13-5; and - 4.1.b.2.B. Streams listed in West Virginia High Quality Streams, Fifth Edition, prepared by the Wildlife Resources Division, Department of Natural Resources (1986). - 4.l.b.2.C. Streams or stream segments which receive annual stockings of trout but which do not support year-round trout populations.	Applies to high quality waters under Class 2 of the state's classification system. These are waters which have an existing quality that is better than the established use-support criteria and where an assimilative capacity exists for parameters that would be affected by a proposed activity. Waters classified as 2AB, 2A, 2B, or 2C are known to support populations of fish and/or drinking water supplies.
Intergovernmental coordination and public participation provisions required?	The Division shall conduct all antidegradation reviews consistent with the intergovernmental coordination procedures included in the state's continuing planning process. Because the socio-economic importance of a	Need satisfaction of the intergovernmental coordination of the state's continuing planning process and opportunity for public comment and hearing	Yes. The Antidegradation Policy under Section 8 of Water Quality Standards regulations states that Wyoming Department of Environmental Protection must conduct intergovernmental coordination and public participation before

	proposed activity is a question best addressed by local interests, the Division will give particular weight to the comments submitted by local governments, land use planning authorities, and other local interests in determining whether the balancing of benefits and costs that was the basis for the Division's preliminary decision was appropriate. Based upon comments and information received during the public comment period, the Division may reverse its preliminary determination regarding the social or economic importance of a proposed activity.		issuing a permit to a new or increased source of pollution that meets the five antidegradation policy conditions. The antidegradation implementation policy specifies public notice and comment period for issuance of NPDES point sources (non-stormwater) and stormwater industrial permits and acknowledges lack of public comment periods for stormwater construction general permits (beyond that held for permit issuance) and 401/404 permits.
Burden of proof needed to demonstrate that lower WQ is necessary to accommodate important economic or social development		Must demonstrate that lowering water quality is necessary in the area in which the waters are located. In evaluating the regulated activity's demonstration of socio-economic importance, the agency may use EPA's Interim Economic Guidance for Water Quality Standards Workbook (EPA 823-B-95-002, March, 1995).	In determining the economic reasonableness of water quality control alternatives, the Administrator may use some of the following factors to weigh the reasonableness of the various alternatives. (1) Whether the costs of the alternative significantly exceed the costs of the proposal; (2) For publicly owned treatment works (POTWs), whether user charges resulting from the alternative would significantly exceed user charges for similarly situated POTWs or public water supply projects; (3) For any discharger into waters of the state, whether the treatment alternative represents

			costs that significantly exceed costs for other similar dischargers to similar stream classes, or standard industry practices. (4) Any other environmental benefits, unrelated to water quality which may result from each of the alternatives examined.
Specific requirements for determining "important economic and social development"	The applicant is required to demonstrate the social and economic importance of the proposed activity. The factors to be addressed in such a demonstration may include, but are not limited to, the following: (a) employment (i.e., increasing, maintaining, or avoiding a reduction in employment), (b) increased production, (c) improved community tax base, (d) housing, and (e) correction of an environmental or public health problem.	The regulated activity must document such factors as employment, increased production, improved community tax base, housing, ancillary community economic benefit, correction of an environmental or public health problem, etc. In addition, a regulated entity may be required to submit the following: information pertaining to current aquatic life, recreational, or other water uses; information necessary to determine the environmental impacts that may result from the proposed activity; facts pertaining to the current state of economic development in the area; government fiscal base; and land use in the areas surrounding the proposed activity.	If the applicant submits evidence that the activity is important development, it shall be presumed important unless information to the contrary is submitted in the public review process. The determination shall take into account information received during the public comment period and shall give substantial weight to any applicable determinations by local governments or land use planning authorities.

How State assures that existing uses are fully protected while allowing lower WQ	Prior to authorizing any proposed activity that would significantly degrade a tier 2 water, the Division shall ensure that existing uses will be fully protected consistent with the tier 1 implementation procedures provided.	The Antidegradation Implementation Policy refers to the use of trading as one mechanism for assuring existing uses are protected. For example, under Tier 2 protection, the policy states: "A proposed activity that will result in a new or expanded discharge in a water subject to Tier 2 protection may be allowed where the applicant agrees to implement or finance upstream controls of point or nonpoint sources sufficient to offset the water quality effects of the proposed activity from the same parameters and insure an improvement in water quality as a result of the trade."	For Class 1 waters, existing uses will be protected by implementing the requirements described in Section III of this implementation policy. For High Quality and Use Protected Waters, this implementation policy assumes that attainment of the criteria assigned to protect the current waterbody classification will serve to maintain and protect all existing uses. In some cases, however, water quality may have improved in the segment since the classifications were assigned, resulting in an existing use that is higher than the current classification. In other cases, the classifications may have been assigned based on inadequate information, resulting in classifications that do not fully encompass the existing uses of the segment. Where the antidegradation review results in the identification of an existing use that has protection requirements that are clearly defined, but are not addressed in the current classification and criteria, the Division will ensure that such existing uses are fully protected, based on implementation of appropriate numeric or narrative water quality

			criteria or criteria guidance. For example, where a proposed activity will result in the discharge of a substance for which sufficient data to derive appropriate criteria are available (e.g. §304(a) criteria), but numeric criteria have not been adopted in the Chapter 1 regulations, the Division will develop effluent limitations that will protect the existing use. In cases where there is a proposed discharge where federally-listed threatened or endangered species are present (i.e. aquatic species), the Division will work with the U.S. Fish and Wildlife Service and EPA to gather available information and evaluate whether special existing use protection requirements are necessary to protect the listed species. Where there is a question regarding the appropriate classification of a segment, the applicant may be required to provide information regarding existing uses.
How State evaluates BMPs for NPS control in antideg review		If BMPs are demonstrated to be inadequate to reduce or minimize water quality impacts, the Secretary may require that more appropriate BMPs be developed and applied	No mention of BMP evaluation. The Antidegradation Implementation Policy states that NPS BMPs will maintain existing quality and water uses.

Criteria used to identify ONRWs	The factors to be considered in determining whether to assign an ONRW designation may include the following: (a) location (e.g., on federal lands such as national parks, national wilderness areas, or national wildlife refuges), (b) previous special designations (e.g., wild and scenic river), (c) existing water quality (e.g., pristine or naturally-occurring), (d) ecological value1 (e.g., presence of threatened or endangered species during one or more life stages), (e) recreational or aesthetic value (e.g., presence of an outstanding recreational fishery), and (f) other factors that indicate outstanding ecological or recreational resource value (e.g., rare or valuable wildlife habitat). Outstanding water quality is not a prerequisite for ONRW designation. The public may nominate any state water for ONRW protection at any time by sending a written request. The written request should explain why an ONRW designation is warranted based on one or more of the factors identified above.	ONWRs include, but are not limited to, all streams and rivers within the boundaries of Wilderness Areas designated by The Wilderness Act within the State; all Federally designated rivers under the "Wild and Scenic Rivers Act; all streams and other bodies of water in state parks which are high quality waters or naturally reproducing trout streams; waters in national parks and forests which are high quality waters or naturally reproducing tout streams; waters designated under the "National Parks and Recreation Act of 1978"; and those waters whose unique character, ecological or recreational value, or pristine nature constitutes a valuable national or state resource.	Class 1, Outstanding Waters are based on value determinations rather than use support. Class 1 waters are those surface waters in which no further water quality degradation by point source discharges other than from dams will be allowed. In designating Class 1 waters, water quality, aesthetic, scenic, recreational, ecological, agricultural, botanical, zoological, municipal, industrial, historical, geological, cultural, archaeological, fish and wildlife, the presence of significant quantities of developable water, and other values of present and future benefit to the people are considered. (taken from http://www.blm.gov/nstc/WaterLaws/wyoming2.html)
Application of antidegradation policies to other activities such as channel and flow alterations		Not discussed.	The Antidegradation Implementation Policy doesn't specifically address other activities, although it does single out stormwater industrial and construction discharges.
Determination of cumulative WQ		Not explicitly addressed, although language at Section 5.6.c in the Antidegradation Implementation Policy touches on this by stating,	Not mentioned specifically.

impacts		"Degradation will also be deemed significant if the proposed activity, together with all other activities allowed after the baseline water quality is established, results in a reduction in the water segment's available assimilative capacity of 20% or more at the appropriate critical flow conditions for the parameters of concern.	
Requirements for alternatives analyses	The evaluation prepared by the regulated entity must provide substantive information pertaining to the cost and environmental impacts associated with the following alternatives: pollution prevention measures, reduction in scale of project, water recycle or reuse, process changes, innovative treatment technology, advanced treatment technology, seasonal or controlled discharge options to avoid critical water quality periods, improved operation and maintenance of existing treatment systems, and alternative discharge locations.	The evaluation prepared by the regulated entity must provide substantive information pertaining to the cost and environmental impacts associated with the following alternatives: pollution prevention measures, reduction in scale of project, water recycle or reuse, process changes, innovative treatment technology, advanced treatment technology, seasonal or controlled discharge options to avoid critical water quality periods, improved operation and maintenance of existing treatment systems, and alternative discharge locations.	The assessment shall at a minimum, address practical water quality control technologies, the feasibility and availability of which has been demonstrated under field conditions similar to those of the activity under review.